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# SEVENTH ANNUAL REPORT

OF THE

BOARD OF TRUSTEES

OF THE

# OHIO AGRICULTURAL AND MECHANICAL COLLEGE,

TO THE

GOVERNOR OF THE STATE OF OHIO,

FOR THE YEAR 1877.

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COLUMBUS:

NEVINS & MYERS, STATE PRINTERS  
1878.





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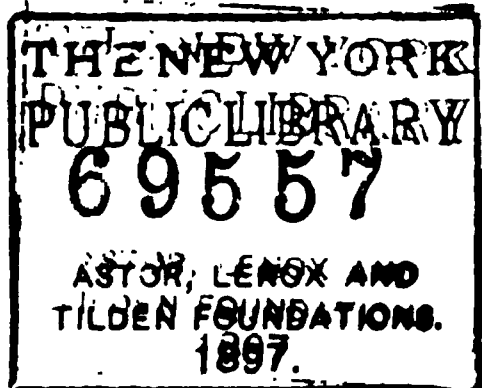
TO THE

GOVERNOR OF THE STATE OF OHIO,

FOR THE YEAR 1877.



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NEVINS & MYERS, STATE PRINTERS  
1878.



ROY W. M.  
J. B. M.  
J. B. M.

COLUMBUS, OHIO, *November 15, 1877.*

**Hon. THOMAS L. YOUNG, Governor of Ohio :**

**SIR:** I have the honor to transmit to you herewith the seventh annual report of the Board of Trustees of the Ohio Agricultural and Mechanical College.

Very respectfully, your obedient servant,

**J. SULLIVANT, Secretary.**

**BOARD OF TRUSTEES.**

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*Professor of Zoölogy and Comparative Anatomy.*

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*Professor of Military Science and Tactics, and Adjunct Professor of Mathematics.*

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JOSIAH R. SMITH, A.B., *Librarian.*



## REPORT OF THE BOARD OF TRUSTEES.

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The Legislature of Ohio, on April 2, 1877, passed "an act to regulate the Ohio Agricultural and Mechanical College of Ohio, and to repeal certain acts therein named."

By this act the Board of Trustees was increased from five to twenty, so as to include one member from each Congressional District of the State.

The Board is at present composed of the following members :

1st District.....	Alfred Gaithor.
2d " .....	C. Kinsinger.
3d " .....	Cyrus Falconer.
4th " .....	R. P. Finley.
5th " .....	J. P. Schmieder.
6th " .....	W. H. Scott.
7th " .....	Herman Hoover.
8th " .....	A. C. Deuel.
9th " .....	T. C. Jones.
10th " .....	W. P. Noble.
11th " .....	Ralph Leeto.
12th " .....	J. Sullivant.
13th " .....	D. W. Caldwell.
14th " .....	Thomas Mickey.
15th " .....	A. W. Glazier.
16th " .....	J. C. Jamison.
17th " .....	A. B. Cornell.
18th " .....	C. W. Horr.
19th " .....	E. F. Ensign.
20th " .....	W. S. Streator.

Pursuant to a call from the Governor, the new Board met at the College on June 19, 1877, and effected a permanent organization, by the election of the following officers and committees :

*President*—Warren P. Noble.

*Secretary*—Joseph Sullivant.

*Treasurer*—Henry S. Babbitt.

*Executive Committee*—T. C. Jones, A. C. Deuel, Herman Hoover, W. S. Streator, J. Sullivant.

*Committee on Farm Management*—E. F. Ensign, C. Kinsinger, J. C. Jamison.



The further action of the Board will more fully appear in the "proceedings of the Board of Trustees."

As the Ohio Agricultural and Mechanical College becomes known, it steadily advances in public favor, and each successive year since its opening has had about forty per cent. increase in students. The present College year, which commenced in September, promises to exceed this ratio, for there are now over two hundred students in attendance upon the full and practical courses of studies in the College.

The reports of the President, and Professors, will give information as to the progress and condition of the several departments, and the Treasurer's report gives the receipts and expenditures for the past year.

Important additions to the means of instruction have been made during the year, among which may be mentioned a number of the beautiful and exact clastic models, made by Dr. Auzoux, of Paris, greatly facilitating the teaching of human anatomy. To the Physical and Mechanical Department a new room has been added, and fitted up, to receive the powerful testing machine, built especially for this College; by means of this machine, the strength of wood used for building or machinery, iron and steel used as rods, bars, bolts, or cables in bridges, or other work, or in steam boilers and manufactures, may be tested, and the maximum strain that may be safely borne, ascertained and recorded; and also the crushing power which our brick, building stones, our concretes, clays, and cements will resist.

Already experiments have been made in this direction, on such materials as have been accessible to us.

There can be no doubt of the great utility of a systematic and thorough course of experiments on this subject; but the collection and preparation of suitable materials involves some expense; the specimens of wood and stone must be made of uniform size, and for doing this, a small appropriation is needed; but the valuable results to be obtained will more than over-balance the outlay.

The act of Congress, donating lands to establish agricultural colleges, made it imperative that military tactics should be taught therein. We are complying with this requirement, and credit is due Lieut. Lomia for the high degree of efficiency to which he has brought his department during the College year, at the close of which, in June last, the battalion of College cadets had the honor of a review from Governor Young, and received commendation from one so well qualified to judge.

From the nature of our government; it is apparent that if necessity arises in the future for a resort to arms, our defense must be, as it has been in the past, mainly confided to a citizen soldiery; but it is

also obvious that such soldiery can only be made efficient under trained and competent officers having knowledge of military affairs, for no matter what may be the native intelligence and bravery of the people, they could not stand against a trained and disciplined force, unless they could oppose it with equal discipline and military knowledge.

It was the manifest intention of Congress widely to disseminate this necessary knowledge among the people through these Colleges, and hence the military feature and condition incorporated so prominently in the grant.

Apart, however, from the requirement of "The Act," military drill is an important and beneficial adjunct to College order, teaching, as it does, personal responsibility, prompt and ready obedience to proper orders, and respect for constituted authority. Beside the physical advantages of the drill in the way of needed exercise, it imparts to our students a good manner, correct deportment, and a manly carriage; and for these reasons, if for no others, it should be continued and enforced.

This important exercise, however, is often interrupted on account of the weather, and this, at present unavoidable interruption, can only be obviated by the erection of a drill-room, which may be commodious but inexpensive; and for this purpose an appropriation ought to be made by the Legislature.

We have heretofore received one hundred and twenty five stands of arms, under an act of Congress authorizing the issue of arms to Agricultural Colleges, in order to encourage and facilitate the teaching of military tactics. Owing to the increase of students, it became necessary to make application for seventy-five more of the same kind of arms, and this brings our quota to two hundred—all we are entitled to from the Government, and which we expect soon to receive.

May 7, 1877, the Legislature of Ohio passed an act requiring the establishment of a Department of Mines, Mine Engineering, and Metallurgy in our College, and made an appropriation of forty-five hundred dollars for this purpose.

At the meeting of the Trustees, in the following June, they proceeded to establish such a department, and Mr. Henry Newton was appointed to the new chair. Mr. N. having visited the college, accepted the position, expecting to commence his labors at the opening session in September last.

In the meanwhile, under an appointment of the United States Government, he visited the Black Hills, to complete some geological and mineral investigations upon which he had been employed; but, unfortu-

nately, he was almost immediately prostrated by mountain fever, and died after a brief illness.

Thus suddenly cut off in the full vigor of life, just as a position of usefulness and honor was opening before him, and which, from his antecedents, we believe he was well qualified to fill with credit to himself and advantage to us, we can but deplore his early death as a loss to science, and offer our sympathies to his bereaved family.

The place was now offered to Mr. William Guy, of St. Louis, a graduate from the renowned mining school of Freiberg, in Saxony. He also visited the College, and left with the expectation of accepting the place, but on his return to St. Louis found it impracticable on account of previous business connections, which could not be at once dissolved.

In the beginning, it was desired to communicate with Mr. John A. Church, but his location could not then be ascertained. Subsequently, finding he was in Nevada investigating the Comstock silver mine for the United States Government, attention was again turned to him, a communication effected, and, after correspondence, the position was offered to and accepted by him, subject to the approval of the Board of Trustees.

Mr. Church is an educated and practical mining engineer and metallurgist, and his high attainments and experience in his profession qualify him to render important service, in connection with his department, in aiding the development of the valuable mineral resources of Ohio.

Mr. C. proceeded promptly to New York, where he is engaged in procuring supplies and equipments; but owing to the unavoidable delays from the circumstances detailed the School of Mines and Mine Engineering and Metallurgy can not be opened before early in December, at which time we confidently expect it to be in successful operation.

The new department having been located in the eastern wing of the building, it became necessary to prepare rooms for its reception, and introduce water, steam, and gas where needed.

During the last vacation, and this fall, the College building has been put into thorough repair, new cases and conveniences added to some of the departments, and the various steam, water, and gas-pipes, and other exposed iron work, protected by a preservative composition. The old armory was vacated and turned over for the use of Mr. Church, and a new armory has been prepared.

Last March our faithful and competent janitor, Samuel S. Martin, died very suddenly at the College, while engaged in his duties. His place has been acceptably filled by the appointment of Michael Dillon.

Owing to the want of means, little has been done towards improving

the grounds other than planting of trees and the ordinary work necessary to keep the grounds in tolerable order.

Last spring the Trustees secured the services of Mr. Charles E. Thorne, a practical farmer, and his good judgment and management commend themselves by the improved condition of the farm.

For the farm management and operations during the farm year, which ends in April, reference is made to the accompanying farm report.

It is estimated that all the income from the endowment fund now in the State Treasury will be required for the maintenance of the College during the coming year.

Temporary sheds for coal were at first erected, but these should be replaced by more substantial and permanent structures.

We must repeat what has heretofore been urged to the Legislature, that an appropriation is much needed for the moderate equipment of a machine shop, which is not only necessary for fully carrying out the practical education originally designed by the Trustees in connection with the Physical and Mechanical Department, but it would also be of great service and assistance to those students who are struggling to educate themselves by their labor.

The past year has been one of faithful work by the faculty, and satisfactory progress in the College, which only requires that its facilities for giving a cheap, yet extended and thorough, as well as practical education, should be more widely known, that it may command that full and public recognition it so justly deserves.

The Legislature of Ohio, to whom Congress committed this great and perpetual trust, has hitherto contented itself with simply giving a charter for the Ohio Agricultural and Mechanical College, seeming to regard it as only a local corporation, like hundreds of others in the State. But this is a mistake—for in accepting the grant from Congress, it assumed all the obligations and liabilities the grant carries with it. And we understand that a recent decision of the Supreme Court establishes the fact that our College is more than a simple corporation—that it is a *State Institution*, and under the care and patronage of the State, as much as the Blind, the Insane, or Deaf and Dumb Asylums. If this be so, certainly our Institution should in like manner receive the fostering care and sustenance so liberally bestowed upon them. With an approving and generous encouragement from its natural guardians, the Legislature, the Ohio Agricultural and Mechanical College will be an assured success; for it is already rich in promise of great usefulness to that large and worthy class for whom the General Government designed it, “in order to pro-

mote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

Let the Legislature carry out, in good faith, and with a liberal spirit, the obligations it voluntarily assumed for this Institution under the grant of Congress, and it will receive the approbation of all right-minded citizens, without distinction of party, among the whole people, for whom this College was created.

Respectfully,

J. SULLIVANT, *Secretary.*

NOVEMBER 15, 1877.

## REPORT OF THE PRESIDENT.

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*Hon. WARREN P. NOBLE, President of Board of Trustees :*

DEAR SIR: I hereby present my fifth annual report to the Board of Trustees, covering the year from November 15th, 1876, to November 15th, 1877. I am happy to record the steady progress of the College in its appointed work. With the increased efficiency of the board of instruction that comes from successful experience, with a noteworthy gain in the equipment of the departments, and with a steady growth in public favor, as is shown by the increased number of students, we may congratulate ourselves that the College is taking the place that belongs to it in the educational system of the State.

The constitution of the Faculty remains unchanged from the date of my last report, except in one particular. The professorship of Political Economy and Civil Polity was abolished at the last meeting of the Board of Trustees, in order to make place for the department of Mining Engineering. The professor-elect of the new department, Mr. John A. Church, M.E., has just taken his place. He brings to this chair thorough training and ten years of successful experience, a part of which has been gained in the employment of the general government.

There have been 251 students in attendance during the year, a gain of 109, or 77 per cent. over the number reported in the last year's catalogue. These students are drawn from six States of the Union, and fifty counties of Ohio are now represented in the College.

The register of the present term contains the names of 211 students that have regularly entered college classes.

The most notable advance of the year is the establishment and equipment of the department of Mining and Metallurgy, to which I have already referred. The subject is one of great practical importance to the people of the State, and it is certainly within the province of the College to provide instruction in it. There are, however, certain other subjects that precede it in order of time. To enter successfully upon the studies of this department, the student must first have mastered at least the elements of Chemistry, Physics, and Geology, and considerable progress in Mathematics is also demanded. It is right, therefore, that provision should first be made for these and similar subjects, which make the com-

mon foundation for the applications of science to practical life, but among these applications none, except Agriculture, which is already provided for, deserves more prompt recognition than the subject of Mining Engineering.

It is gratifying to record that the outfit of the department was furnished by the State Legislature. The donation will certainly prove to be a wise investment for the State. By the addition of this one chair to the College resources, all the facilities of a well-equipped mining school are now offered to the young men of the State, at very much less expense than is demanded elsewhere.

The department of Military Science and Tactics has now been established for more than a year, and has proved itself a very valuable addition to our college work. Its most important feature is the military drill, for which it provides, the success of which, during the past year, is unquestionable and most gratifying. Two and one-third hours in each week have been devoted to this exercise, with conspicuous and decided advantage in several ways.

It has promoted the health of those engaged in it, and has improved their bearing. Such a place has been found for it in the morning session that it helps rather than hinders the work of recitation, by giving a needful intermediate change. It has worked in the interest of college discipline by the value that it sets upon punctuality, precision, and obedience to authority. All these things can be said without taking account of the value of the knowledge of military tactics in itself. The drill is, on the whole, popular with the students. To some, of course, it is distasteful, and but few would be regular in it unless they were required to be, but most are glad to be obliged to render the service, for they see and appreciate the advantages derived from it.

This brings me to add that the secret of our success in a department where failure is so common, is to be found in the fact that so much is made of it for the short time for which it lasts. The discipline is thorough and exacting, and consequently the progress is rapid and easily recognized. Any relaxation of requirements would certainly lead to demoralization and failure. If the drill were made voluntary, it would not last a term.

Exemption is granted on the grounds of conscientious scruples and physical disability, and students are also excused from compulsory attendance after having attained a certain grade in college work. The number of those that avail themselves of these grounds of exemption is very small.

The College is fortunate in securing the services of so thorough and



accomplished an instructor as the officer at present assigned to this position.

The Secretary of War turned over to the College last year, for use in instruction in military tactics, 125 Springfield rifles, with necessary accouterments. The increase in numbers of our military battalion renders this supply inadequate, and it is very desirable that enough additional arms should be secured to make the advantages of all members of the battalion equal.

I append a list of the questions on which entrance examinations were held at the opening of the present year.

The subject of algebra was dropped from the requirements for entrance at the last meeting of the Board of Trustees. An examination of the results of this change shows that about twenty students have gained admission to the College this term who could not have entered by the former standard. This number is drawn, with two exceptions, from the city of Columbus and its immediate vicinity. It is made up, to a large extent, of quite youthful students, some of whom find it difficult to carry on College work, and others of whom lack the proper maturity and discretion to be safely intrusted with College freedom. It is not practicable to ask enough more in the common branches to make compensation for this loss. By such requirements injustice would be done to the great body of students that come from country schools. The change, therefore, results in practically lowering the grade of admission to the College. But the standard has already been set quite as low as it can be, if the present course of study is to be maintained. If the requirements for admission are kept where they now are, one of the two things must be done. The whole of the work of our required course—and especially that of the second year—must be reduced in amount and difficulty, or a year must be added to the required course, making seven years necessary for graduation. To lower the quality of our College work on this ground would be, in my judgment, to prefer the interests of those that are not fitted for College work, and whose educational necessities are best met by the free schools of the State, to the interests of those that are qualified to pursue College studies in any worthy meaning of the term.

I am fully persuaded that the best interests of the College will be subserved by restoring the elements of algebra to the subjects of entrance examination, and I respectfully recommend to the Board that this restoration be made. I may add that every member of the Faculty agrees with me as to the desirability of this result.

It is the desire of the Faculty to render the advantages of the College as directly serviceable to the agricultural interests of the State as they

can properly be made. A plan for extending its usefulness in this direction, which has recently been discussed and acted on by us, will be laid before the Board of Trustees for consideration at the November meeting. The general features of the plan are these: During ten weeks of the winter term, courses of lectures shall be delivered in the College, at the rate of four lectures each day, on the subjects of Agriculture, Veterinary Zoölogy, and Veterinary Medicine, and also upon Botany, Chemistry, Physics, Meteorology, and Geology, as they are related to Agriculture, and upon Land Surveying and Farm Accounts. These lectures shall be open to young men of not less than eighteen years of age. No entrance examinations will be required, and exemption from military drill will be granted. It is believed that great service could be rendered to a class of young farmers who should enter the College for the sake of such instruction.

The condition and wants of the several departments can be learned from the appended professorial reports.

The Geological Cabinet, which is under my special charge, has been considerably increased during the last year, particularly in those divisions that represent the economical geology of the State. Special mention may be made of contributions received from John Campbell, Esq., Ironton; Col. Samuel Johnson, Ironton; George S. Williams, Esq., Scioto Furnace; Capt. Lewis Davis, Jackson C. H.; W. B. Brooks, Esq., Columbus; XX Furnace, Shawnee.

We have now an extensive and orderly showing of all the best known iron ores of Ohio, and are rapidly accumulating representatives of every well-marked ore horizon, whether worked or not. The same may be said of our other economical staples. A fine series has been collected from the Hocking Valley which illustrates all the recent remarkable developments of that region.

Valuable contributions to our knowledge of the geology of the State have been made during the year by various members of my classes. Mr. C. C. Howard has made several chemical analyses—principally of ores and limestones from the Hocking Valley—a record of which will be found in the accompanying report of the department of chemistry. Messrs. C. H. Dietrich and J. S. Humphrey have executed numerous measurements, with the engineer's level, of important sections on the western margin of our coal-field. Similar service has been rendered by Messrs. Christopher H. Brown, Hiram D. Gregory, John C. Atkinson, and Thomas Kelly, in the counties of Lawrence, Scioto, Gallia, and Vinton, respectively. The work has in all cases been found to be accurate and satisfactory to a high degree.

Two of the students named above, who design fitting themselves for mining engineers, spent two months of the last summer vacation in the coal mines of Steubenville, acquiring there, by practical experience with pick and drill, a familiarity with underground work which books alone can not give. I speak of this case here because I believe that some such experience should be required of all who seek for the degrees of the institution in these fields of practical activity.

I have the honor to remain,

Very truly yours,

EDWARD ORTON,  
*President and Professor of Geology.*

EXAMINATION QUESTIONS, SEPTEMBER 12, 1877.

[Write your name, age, school last attended, and length of time since you last studied the branches named below.]

GEOGRAPHY.

1. Name the county in which you live; bound it by counties; name and locate the county seat, and mention the principal stream that flows across or by it.
2. Bound Ohio; state the number of counties, and name the five principal cities and five rivers situated within the State.
3. How many States in the Union?
4. Name ten principal cities of the United States in the order of their size.
5. What are the great water-sheds of North America, and what ranges of mountains or other elevations separate them?
6. State the legal title and personal name of the present ruler of (1st) France, (2d) Brazil, (3d) England, (4th) Germany, (5th) Italy, (6th) Greece, (7th) Spain, (8th) Turkey.
7. Locate the following cities, viz.: Vienna, Edinburgh, Moscow, Munich, Geneva, Genoa, Belfast, Constantinople, Lyons, Strasburg.
8. Name and locate the capital of Japan.
9. Name and locate the highest mountain.
10. Name and locate the greatest river.
11. Name and locate the oceans.
14. What is the proportion of land to water on the face of the earth?

ARITHMETIC.

1. Multiply  $\frac{2}{3}$ ,  $\frac{9}{11}$ ,  $2\frac{3}{4}$ ,  $\frac{1}{2}$  of  $\frac{15}{18}$  and  $\frac{2\frac{1}{2}}{3\frac{1}{7}}$  together, using cancellation as far as may be convenient.

2. Reduce  $\frac{3\frac{1}{4}}{2\frac{1}{8}} \div \frac{2\frac{1}{8}}{3\frac{1}{4}}$  to a simple fraction, or a whole number, as the case may be.

3. Find the greatest common divisor of 28, 88, and 416, and state the rule for the work.
4. Find the least common multiple of 28, 88, and 416, and give the rule.
5. Give the sum, difference, product, and quotient of .0101 and .00101, using the latter number as the divisor.
6. If 600 bushels are worth \$372, what is the value of 200 bushels 3 pecks, at the same rate?
7. What per cent. of 216 is 54?
8. Find the simple interest of \$275.40 for 3 years, 5 months and 12 days, at 7 per cent. per annum.
9. Find the square root of 10 to 4 places.
10. An article was sold for \$1.60, at a loss of 80 per cent.; what would have been the gain or loss had it been sold for \$2.02?

## ENGLISH GRAMMAR.

1. (a) What is a *collective noun*, and  
(b) What is the rule for the number of the verb used with a collective noun in the nominative case?
2. How do you write (a) the possessive sing. of nouns ending in *s* in the sing., and (b) the possess. plur. of nouns taking *s* in nom. plur.?
3. (a) The kinds of pronouns, with a sentence containing an example of each kind?  
(b) Mention the words used as *relative pronouns*—all of them.
4. (a) What are the kinds of verbs? Give illustrative sentences.  
(b) What is the office of the *subjunctive mood*, and  
(c) What is the difference in meaning between the conditional indicative “If I am” and the subjunctive “If I be?”  
(d) What may stand as the subject of a verb, besides nouns?  
(e) In “His going home was unexpected,” parse *going*.
5. The general rule for the position of the adverb “*only*?”
6. Both conjunctions and prepositions are connecting words, but what is the difference in their office?
7. In “*They ne’er pardon who have done the wrong.*”  
(a) Parse words *italicized*.  
(b) If “a pronoun is a word used instead of a noun,” what noun does “*they*” stand for or refer to?  
(c) Is what follows pardon a *phrase* or a *clause*, and what is the use or purpose of it?

## DEPARTMENT REPORTS.

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### PHYSICS AND MECHANICS.

EDWARD ORTON, PH.D., *President*:

DEAR SIR: I have the honor to make the following report upon the Department of Physics and Mechanics for the year just ended:

The number of students at work in this department has largely increased. There are at present over fifty students in the first year of the course in physics, and over twenty pursuing the laboratory work of the advanced course. The increase in the number of students in the first year's work renders that work much more laborious than in preceding years, and the class is, indeed, already larger than can be managed efficiently under our system of instruction. Should the increase continue in the future, it will be necessary either to provide for an increase in the teaching force, or to modify in some way the manner in which the instruction is given. I do not believe the latter could be done without diminishing its value. The same remarks will, in general, apply to the class engaged in advanced work. I have in previous reports referred to the difficulties met with in the management of a physical laboratory with a considerable number of students. As far as these difficulties have been overcome, it has been accomplished not only by means of patient labor on the part of the professor, but also by a generous spirit of accommodation on the part of the students. I think I may safely assert that more time has been spent in physical laboratory work in this Institution during the past three years than in any other in the country, the hours per week for each student being several times that in some of the foremost physical laboratories. We have, besides, worked under the great disadvantage of being less amply supplied with working appliances than are many of these.

Within the year some important additions to our equipment have been made, to which I will briefly refer.

Through the kindness of Governor Young and Hon. Milton Barnes, Secretary of State, we have received the complete set of United States standard weights and measures, which have been, up to this year, deposited in the State House. This set includes not only the weights and

measures, but the large and fine balances for purposes of comparison and testing. They are properly set up in a suitable room in the laboratory, and it is believed that they will be much more carefully preserved than was possible in their previous location. With the fine set of United States metric standards previously deposited with us, they furnish a means of accurate comparison and verification probably unequalled in any other college in the country.

The most considerable addition within the year has been the testing machine made by Riehle Bros., Philadelphia, for the College, and purchased with an appropriation made by the General Assembly at the close of its last session. The machine is complete in its arrangements for testing for tensile strength, by transverse stress, and by crushing. Its capacity is forty thousand pounds. A suitable room in the basement has been prepared for it, and it already gives promise of great usefulness, not only to the College, but to the material interests of the State. Several series of tests have been commenced on wood, iron, and stone, and although none of them are entirely complete, the results obtained thus far are of such general interest as possibly to warrant their publication, and I therefore inclose a portion of those already made.

Without desiring to exceed the proper limit of this report as to length, I desire to refer briefly to some of the other work of the year which seems to possess more than a temporary value and interest.

During May and June of the last College year, students from the physical laboratory carried on a prolonged series of experiments upon the flow of water through pipes of various lengths and diameters. The work was done at the pumping-house of the Holly Water Works of this city, and to the Board of Trustees, and especially to the Superintendent, Mr. Frank Doherty, I am greatly indebted for the privileges extended and assistance rendered. These tests, the results of which are of permanent value, were made by Messrs. Henry Snyder, W. S. Jones, and J. K. Mustaine. About the same time a series of practical tests of the relative heating powers of coals was made, extending through several weeks. In these, use was made of the boilers and pumping-engines of the same works, and in carrying them out we were again placed under obligations to the above mentioned authorities. They were made by students from the physical laboratory, Messrs. Anderson, Palmer, Short, and Humphrey. The results of both of these investigations, with charts and diagrams illustrating, were communicated by request to the Board of Trustees of the Water Works, and by them published in full in their last report, a copy of which I herewith transmit.

Many experiments of, perhaps, less importance might be mentioned

as illustrative of the character of the work which we attempt. It is sufficient to say that the whole tendency of the course is to lead the student to habits of careful and accurate observation, and to develop in him a power and a taste for original research.

In reference to the wants of the laboratory I will only repeat what I have said in previous reports, that the increased number of students makes increased demand for instruments of precision, with which work, profitable in all ways, may be done. Some of the instruments most commonly in use for purposes of measurement ought to be duplicated, and could be without great expense. A set of tools for the testing machine for examining the hardness of metals and alloys would be a valuable and an inexpensive addition. But our greatest need just now, it seems to me, is a suitable motive power for driving the lathe and other machinery in the shop. An engine of not less than five or six-horse power should be furnished, and, all things considered, by far the most desirable motor would be the petroleum engine. This is comparatively cheap, and when it is remembered that during a large part of the year there is no steam in the building, and when there is, the pressure is too small to drive a suitable engine, it will be admitted, I think, that it is the best. It can be made to act to its full capacity in a few minutes after starting, and stopped at any time without loss. The great ease with which it can be worked, and the little consumption of material, render it, for our purpose, the most economical motor. With one of these, much work which must now be sent out and paid for at high prices, could be done in our own shop, such as the preparations of specimens for testing and work of a similar character, which we have now much difficulty in accomplishing. I hope that our Board of Trustees may consider this question, and, if they deem it expedient, authorize the purchase of such a machine.

The labor of giving instruction and the management of the department having largely increased at the beginning of the present term, owing to the increase in the number of students, I have felt the necessity, both on my own account and on that of the students, for having an assistant to whom a portion of the work might safely be given. No provision for anything of this kind having been made by the Board of Trustees, I have, with your advice and consent, received the voluntary assistance of Mr. Newton M. Anderson, a student, who, from his several years experience in the laboratory, as well as his general familiarity with the work, has been found competent to render great service in this direction, and I desire to express my indebtedness to him and to other students in the laboratory who have been ever ready to render me any aid in their power, often at a sacrifice of their own time and energy. To two or three stu-



dents the laboratory is much indebted for the construction of some additional instruments of considerable value.

Yours, respectfully,

T. C. MENDENHALL.

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## CHEMISTRY.

EDWARD ORTON, PH.D.,

*President Ohio Agricultural and Mechanical College :*

SIR: I have the honor to present herewith my fifth annual report for the Chemical Department of the College.

During the past year thirty-one students were enrolled in the class in General Chemistry. The number enrolled in the present class is sixty-one.

There were last year eleven students in Analytical Chemistry; this year there are seventeen. It gives me pleasure to add that seven of these are from the last year's class, and are now about ready to begin the important work of Quantitative Analysis.

The work done by individual members of the class was, of course, unequal. The majority of the pupils acquitted themselves with credit, and, on the whole, I consider the year's work as quite satisfactory. Three of the students in General Chemistry continue that study this year. It will also be necessary for two others to review this study before they can be graduated.

The course of study pursued was that sketched by me in my last report, except that I increased the number of "studies" on topics in General Chemistry, and employed the advanced students in making a larger number of preparations than I had previously done.

It is especially gratifying to me that we have now so many analytical students. Nevertheless I regret to add that we are not fully equipped for them in the work of Quantitative Chemistry. We have two balances and two sets of weights. Every student should have at command, at least, his own set of weights, and we need for the class two or more balances in addition to those we have. We should have also a larger drying apparatus. It might be so constructed as to be heated by our steam pipe during the winter months, and by gas during the summer. Its cost will be considerable, but I am certain that it is advisable to have it as soon as the funds of the College will permit.

Allow me also to call your attention to our great need for a better ventilation, and to renew my suggestion that this can be easily accomplished by the now unused flues in the buttresses of the west wing.

The Qualitative students are well supplied for their work. They consume, however, a large amount of material, and there is a corresponding necessity for a continual renewing of supplies. I respectfully suggest that the supply for the coming year be ordered from Europe in time to reach Columbus before the Fall term opens. Fortunately this can be done in such a way as to avoid duties, while securing the advantages of a cheaper market.

Of the sixty students now in General Chemistry, a large proportion intend to begin Analytical Chemistry next year. Unless a large provision is made for them, the department will not be able to furnish them places. We have now desks for sixteen. This number ought to be at least doubled, and even with thirty-two desks I suppose some will be disappointed in finding places.

I beg permission to remind you that these necessities grow with the growth of the College. The fees paid by the students were supposed to cover a little less than the actual expenditure of material furnished by the College, not counting the apparatus, for which they paid at the close of each collegiate year. The fee is now smaller, and I do not think it will cover the running expenses of the department. We are provided with most of the chemicals we shall need this year, but shall need some small purchases. The pressing wants are balances, weights, drying apparatus, and a better ventilation.

You will not need to have me assure you that the conduct of my students is all that could have been expected of gentlemen.

Very truly yours,

SIDNEY A. NORTON,

*Professor of Chemistry.*

The following analyses, among others, have been executed in the College laboratory during the last year by Mr. C. C. Howard, of the class of 1878. It will be observed that all of them are related to important economical interests:

*Analyses of Hocking Valley Iron Ores.*

1. Blue carbonate, from New Straitsville—	
Metallic iron.....	13.97
Silica.....	32.15
2. Baird ore, on eastern outcrop—	
Metallic iron.....	26.69
Silica.....	29.87
3. Dugway ore, Sunday Creek (bottom layer)—	
Metallic iron.....	22.80
4. Dugway ore, Sunday Creek (middle layer)—	
Metallic iron.....	25.70

5.	Conglomerate, underlying Ames Limestone, on L. D. Linscott's land, Trimble township—	
	Metallic iron .....	3.35
6.	Ore from Carbon Hill, 120 feet above Coal No. 6 (Horizon of Iron Point Ore)—	
	Sesquioxide of iron .....	57.23
	Silica .....	19.65
	Carbonates of lime and magnesia .....	23.12
		<hr/> 100.00
	Metallic iron .....	40.06

*Analyses of Hocking Valley Limestones.*

1.	Ames Limestone, from L. D. Linscott's, Trimble township, Athens county—	
	Carbonate of lime .....	91.71
	Carbonate of magnesia .....	.72
	Silicious matter .....	4.51
	Iron, alumina and manganese .....	2.67
		<hr/> 99.61
2.	Shawnee Limestone, from W. W. Poston's, Nelsonville, 65 feet above Coal No. 6—	
	Carbonate of lime .....	85.32
	Carbonate of magnesia .....	Trace.
	Silicious matter .....	10.12
	Iron, alumina, and manganese .....	2.99
	Organic matter .....	.86
		<hr/> 99.29
3.	Shawnee Limestone, from W. B. Brooks's land, section 25, Nelsonville, 65 feet above Coal No. 6—	
	Carbonate of lime .....	72.08
	Oxide of iron .....	3.91
	Silicious matter .....	23.23
	Carbonate of magnesia .....	Trace.
		<hr/> 99.22

*Analyses of Iron Ores, Oswego Iron Company, Oregon.*

Specific gravity .....	3.56	2.26
Organic matter .....	1.37	
Combined water .....	10.30	5.68
Silicious matter .....	2.05	47.84
Ferrie oxide .....	81.72	42.57
Aluminic oxide .....	1.08	1.12
Manganic oxide .....	1.54	.91
Calcic phosphate .....	1.06	2.14
Magnesian carbonate .....	trace	trace
Sulphur .....	.26	.18
	<hr/> 99.38	<hr/> 100.44
Metallic iron .....	57.2	29.8
Phosphoric acid .....	.67	1.35

*Analyses of Fertilizers.*

- No. 1. Salem Fertilizer.
- No. 2. Chicago Fertilizer.
- No. 3. Cleveland Superphosphate.
- No. 4. Cincinnati Raw Bone.

	No. 1.	No. 2.	No. 3.	No. 4.
Water .....	6.57	5.71	4.17	5.94
Organic and volatile matter .....	21.58	50.86	49.20	38.57
Salts, soluble in nitric acid .....	68.60	40.59	41.70	53.46
Insoluble residue .....	3.25	2.84	4.93	2.03
<hr/>				
Insoluble in water .....	....	66.65	52.63	74.46
Soluble in water .....	....	33.35	47.37	25.54
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Soluble phosphoric acid .....	none	*1.02	6.73	3.23
Insoluble phosphoric acid .....	....	*8.80	3.08	16.37
<hr/>				
Total phosphoric acid .....	....	9.82	9.81	19.60
Nitrogen .....	1.26			

\* The request for Nos. 2, 3, and 4 was only for phosphoric acid.

ENGLISH AND MODERN LANGUAGES.

COLUMBUS, OHIO, *November 13, 1877.*

EDWARD ORTON, *President:*

MY DEAR SIR: I have the honor to submit the following brief report upon the department of English and Modern Languages:

For the explanation of the theory upon which the courses of the department are organized, I refer to the more full report of last year (Sixth Annual Report, pp. 76-79). Occasional changes of detail are made, but the courses, as originally planned, are adhered to substantially, and seem justified by their results.

I have previously and repeatedly expressed my sense of the crying need of works to serve as at once the apparatus and cabinet of specimens for the illustration of the text-books and lectures of the department. It is my duty to urge this need again, and with added emphasis. Certainly my colleagues need and deserve the annual additions made to their already admirable facilities alike for illustration and research, but I cannot but deplore and repeat that my department is absolutely without equipment for either the one or the other, whilst its needs (though, in comparison, trifling in cost) are as imperative as those of other departments. I am precisely in the position of a man teaching geology without

a fossil, botany without a flower, physics without apparatus. For the purchase of a very few of the texts and other works to which my classes are continually referred, and without which there can be no adequate illustration of the languages and literatures they are studying, I earnestly ask authority to spend *two hundred dollars* (\$200). This sum will go the further in that books imported for the College are free of duty. It requires from six to nine weeks to import books (and nearly all of those required are foreign works), and hence the advisability of giving the order as soon as possible, if at all.

Miss Williams has charge of both the French Classes, the first year German Class, and one section of the class in the required course English. It is mere justice to say, that what I believe to be the good condition of the department, is largely due to her zeal, scholarship, and teaching ability.

With great respect, yours,

JOSEPH MILLIKIN,

*Prof. Eng. and Mod. Lang.*

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## BOTANY, AGRICULTURE, AND VETERINARY MEDICINE.

EDWARD ORTON, *President*:

DEAR SIR: The work done during the past year by classes under my charge is as follows:

*Structural Botany*.—A class of forty-one began this subject with the second term of the college year, and continued through the term.

*Systematic Botany*.—The class passed from structural to systematic botany with the beginning of the third term, through which it continued with daily recitations, and the analysis of plants. The class numbered forty-eight, but to accommodate some who had conflicting studies, it was divided into two sections. After the close of the term, some members of the class came regularly to the college, and continued the study through the entire college vacation.

*Economic Botany*.—This, daily, occupies the attention of a small class. With our improving facilities this branch of the subject promises to be exceedingly interesting and profitable.

*Agriculture—First Year*.—A class of six made a study of the principles of agriculture through the entire year.

*Agriculture or Veterinary Medicine—Second Year*.—A class of four young men devoted themselves to this subject through the year with great dili-

gence and success. The heavy losses sustained by stock-owners from diseases of animals will, it may be presumed, lead to an increased interest in this department.

Truly yours,

N. S. TOWNSEND.

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DEPARTMENT OF MATHEMATICS AND ENGINEERING.

COLUMBUS, OHIO, *November 13, 1877.*

EDWARD ORTON, *President:*

DEAR SIR: The classes under my direction within the past year have been, in numbers and subjects, as follows: Algebra, 87; geometry, 62; trigonometry, 31; astronomy, 7; surveying, descriptive geometry, and other branches pertaining to engineering, 41; making a total of 198 in the classes. But, as in many cases the same students were in several classes, the whole number of persons was but 142.

There has been the usual variety in the application to study, in the ability, and in the success of the students in the several branches pursued, while the general results have been as good as can be expected under similar circumstances. A few failed, and a few were remarkably successful. It need only to be said further in regard to text-books, that they are all studied through to the end. So much for the books.

The students in engineering are divided into sections for field practice, and every section has at least two exercises each week, as long as the weather admits of out-door work. This field-practice embraces the measurement of heights and distances; the measurement of angles, both by needle and by revolving plates having vernier attachments; and the taking of levels between selected points—sometimes at intervals of several miles. Several examples of each kind are taken by all the sections, and the results are compared, with a view of ascertaining the proficiency of the young men in different kinds of work. Besides these specified examples the sections select cases of their own, and work them out independently.

At least once a year the variation of the magnetic needle is obtained by observations of the pole-star; and all who desire are so instructed in this matter that they can, by themselves, determine this ever-changing value. Also, a line of railroad from one-fourth to one-half a mile in length is run by transit, center stakes are driven, levels are taken, grade-lines fixed, excavations and embankments computed, side-stakes set out,

contour-lines taken, estimates of cost regularly made out, and the proper drawings made in profile and in plan, for road, culverts, bridges, etc.

In the winter, instead of field-practice, the students have exercises in lettering, in topographical drawing, in plotting fields and farms; in fine, in all the work pertaining to this branch of applied science.

I merely do common justice to many of the young men when I say that specimens of their work, in this respect, have not been surpassed by similar work done elsewhere, so far as I am able to speak from personal examination.

In order completely to furnish the department with every variety of instrument used by surveyors and engineers, I would earnestly request the Board, through you, to furnish, immediately, a *solar compass* and a *zenith telescope*. If both of these can not be had, that at least the former should be, so that the classes in engineering may have practical knowledge of every instrument usually employed in general surveyor's work; and I the more earnestly press this request, inasmuch as no appropriation, except to the amount of a few dollars, has been made for this department for four years.

Very respectfully,

R. W. McFARLAND.

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## ZOOLOGY.

OHIO AGRICULTURAL AND MECHANICAL COLLEGE,  
COLUMBUS, OHIO, *November 1, 1877.*

EDWARD ORTON, PH.D., *President:*

DEAR SIR: I have the honor to submit the following report of the condition and work of the Department of Zoölogy and Comparative Anatomy and Physiology:

The equipment of the department continues to be increased by additions to its supply of material and apparatus for teaching and study. The material added has been chiefly in the form of collections of animals, made in different parts of the State, by students in the department, and by myself. The chief addition to the apparatus for teaching has been the long expected set of clastic models in *papier maché*, from the celebrated manufactory of Auzoux, in Paris. We have now in almost daily use a life-size model of the human body, on which can be demonstrated not only the position, form, and structure of the viscera, but also that of every muscle, ligament, articulation, blood vessel, and nerve of importance, with a clearness and measure of accuracy that, for the beginner,



could not be surpassed by the exhibition of the subject itself, even if that were deemed desirable. The value of such a model is great, not only to the general student, but also and especially to a class of students who are yearly seeking the College in increased numbers. I refer to those looking toward the practice of medicine, who wisely seek a thorough scientific education as a foundation for their professional training. While models of this sort can by no means take the place, for such students, of the practical experience of the dissecting-room, they are, in my opinion, of great value to them as a means of preparation therefor. We have also received a number of greatly enlarged models of some of the more intricate organs, such as the eye, ear, larynx, etc.; a series of brains, from that of man down to that of the alligator; and enlarged models of some of the lower animals, whose dissection by students is not practicable.

In behalf of the class of students referred to above, as well as in the general interests of the College, I feel constrained to call attention to a need that I can not but regard as a pressing one, and to which I have already referred in previous reports. I trust that, at an early day, the Trustees of the College will provide for the purchase of a few pieces, at least, of apparatus for the work of practical instruction in, and laboratory study of, Physiology. It is one of the distinguishing features of this College, and one of its chief merits, that in nearly every department of natural science liberal provision has been made for the direct study of nature. Physics, Chemistry, Mineralogy, Geology, Botany, Zoölogy, Comparative Anatomy, all have their laboratories and an adequate supply of apparatus for the student's use. Physiology alone, of all the sciences taught in the College, is studied from text-books only. The outlay of a few hundred dollars would enable students of this science to derive their knowledge directly from nature, in large measure, instead of receiving it all at second-hand, as now; and the increased value of such knowledge not only to those who have the lives of their fellow men in charge, but also to those who have to do with the breeding and care of our domestic animals, would more than repay the expense.

The only change of importance in the practical work of the department has been the adoption, for the use of the advanced class in Physiology, of Foster's Text-Book, a most admirable manual, which leaves little to be desired in such a work.

The constant increase in the attendance upon the College has brought with it an increase in the number and size of my classes, until now I find myself engaged in class-room work during every hour of the College day. Should the attendance increase next year in the same ratio as



heretofore, assistance in the work of elementary instruction will be a physical necessity.

The whole number of students in this department, for the year, is one hundred and nineteen.

All of which is respectfully submitted.

ALBERT H. TUTTLE, *Professor.*

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## MILITARY SCIENCE AND TACTICS.

OHIO AGRICULTURAL AND MECHANICAL COLLEGE,  
COLUMBUS, OHIO, *November, 1877.*

EDWARD ORTON, PH. D.,

*President Ohio Agricultural and Mechanical College:*

SIR: I have the honor to submit to you the following report of my departments:

### MILITARY SCIENCE AND TACTICS.

The Military Department this year has started under more favorable auspices than in the past year. Last year—the first of its existence—the complex work of not only drilling the soldier, but also making the officer, was given me to accomplish. Much time also was lost on account of the late arrival of the cadet muskets. But with all these difficulties to surmount, the instruction in this department steadily progressed. The squad, the company, the battalion drills, and ceremonies were mastered to a satisfactory degree, as those who witnessed the review by the Governor, and battalion drill on commencement, day, I feel confident, will testify. The task of making an officer sufficiently proficient to take command of a company at battalion drill, is not an easy one; therefore, it was the more gratifying to me that flattering criticisms were bestowed upon my young officers by the Governor, as well as by the regular army officers who honored us with their presence at the commencement.

Two gun detachments were also drilled last year in artillery tactics, and it may be here remarked, that the brass pieces sent us by the general government were served with a precision worthy of the cadets at the National Academy.

Already the morale of our last year's work is apparent upon the new cadets. These young men have begun their duties, not only without murmuring, but with a commendable degree of zeal, and a disposition to obey cheerfully. During the first term of this year, while the new cadets are being put through the squad drill, all of the old ones are being instructed in artillery drill, guard duty, and target practice. We have had targets made, and cadets are regularly practiced at target-

shooting, a record being kept of this firing. As a stimulus to the members of the battalion for excellence in the military art, one of the College Professors generously offers a cadet sword, of the West Point pattern, to the best cadet officer at battalion drill. The Secretary of the Board of Trustees offers, in like manner, a medal to the most proficient artillerist. Other members of the Faculty have donated a handsome sum for the getting up of a prize fund; so that about ten prizes in all will be awarded for special merit in the different branches during the present academic year.

In this connection; I will say that no cadet will be allowed to compete for any prize who shall have against him an average of more than ten unexplained reports per term, in any academic year, up to the time at which the competing drill, or exercise, shall take place.

In a few weeks, when the new cadets shall have been fully incorporated with the battalion, company, and skirmish drill, bayonet exercise will commence. During the winter months and in bad weather, our progress, I fear, will be much impeded for want of a suitable drill-room or hall. Would the Board of Trustees kindly consider this want? A shed put up, even inexpensively, would be productive of the greatest benefits to the Military Department. While the basement room given me last year was barely sufficient for drill purposes, so much of this room has of late been appropriated to other uses, that scarcely half of the space allowed me at first is now available for about double the number of students. I again, therefore, make bold to call the attention of the Board to the providing of some suitable place for drill during the inclement season.

Theoretical military instruction is given this year to two classes. The first year class studies Tactics and Regulations; the advanced class receives instruction, by lecture, in the subjects as stated in my last year's report.

In conclusion, let me add, that my endeavors will be steadily directed to not only imparting theoretical military knowledge, but also to making this knowledge practical. The best way of making this knowledge practical, is, in my judgment, to make soldiers, in the full sense of the word, of the young men, for the short time that they are under drill. But as the first requisite of the soldier is obedience to orders, this must be insisted on in every particular. The soul of military organization is discipline; but discipline consists in the prompt and unquestioning performance of all things, great and small, required by the proper authority. Indeed, the distinctions between great and small can hardly be recognized by the military man. The whole bearing and efficiency of the soldier depend upon the observance of a great number of details, each

one of which is as important as any other, and each one of which, taken by itself, might seem trifling, or even frivolous, to the civilian.

I make these statements to meet the criticisms sometimes heard upon the minuteness of the military duties required of our students. Such criticism, to be valid, must be directed against military drill in itself, and not against the prescribed mode of managing it. A military writer of renown—General George B. McClellan—reviewing the condition of our army, has recently expressed himself as follows: “We do not doubt that 15,000 regulars on the field of the first Manassas would have insured the complete rout of the raw confederates, and in all probability put an end to the war. It was not because the troops engaged were volunteers, that this first important battle was lost; it was because they were undisciplined.” This writer adds further: “If it be true, then, that it is the duty of every government to prepare, in time of peace, the means adequate to defend its territory and its people, the statesman-like method of proceeding is clear enough; and if an army is necessary at all, it should, like any other necessary thing, be made, in every respect, efficient.”

But while it may be impracticable for our Government to keep a large standing army, the legislators of the country have, by law, extended military instruction throughout the whole of our land, by having officers of the army detailed to act as Professors of Military Science and Tactics in the various colleges of the States. When young men, attending such colleges, leave them after a few years of proper military instruction, the country, in the absence of large standing armies, will look to them, in emergencies, to bring into the field, organized and drilled, an army of brave men to maintain her rights.

#### MATHEMATICS.

In this department I have at present two classes, which recite to me daily. One class, composed of five members, studies Analytical Geometry; it will go through the study of the Calculus—Differential and Integral—by the end of this academic year, and is doing remarkably well. The other class consists of twenty-nine members; these began the study of Algebra with me at the beginning of the term. I regret to say that many of them are indifferent students, and, judging from present appearances, barely one-half will go through; the rest, I fear, will either fail entirely, or be conditioned. If I may be permitted to express my opinion, many of the students last admitted do not appear to have been sufficiently long under common school training.

I am, sir, with great esteem, respectfully yours,

LUIGI LOMIA,

*First Lieutenant 5th United States Artillery, Professor of Military Science and Tactics, and Adjunct Professor of Mathematics.*

LATIN AND GREEK.

EDWARD ORTON, PH. D., *President*:

DEAR SIR: I transmit herewith my second annual report of the Department of Ancient Languages. Since my last report, the work of the department has been prosecuted with all the facilities at my disposal, and a fair amount of good work has been done by the students under my charge.

Up to the beginning of the present term, there has been no provision for the study of elementary Latin and Greek in the College, while the required course prepares students for all other departments. The result heretofore has been, that young men, coming here with every variety of insufficient preparation, have not been able to sustain the entrance examinations to the course in Latin and Greek, and consequently have been obliged to take other studies. The Board of Trustees have considered this matter, and provided an elementary course in Latin of two years in length, which will prepare students for the regular College course. One of the elementary classes thus formed has been taken by myself, the other being put in charge of Mr. Arthur Cunningham, a student who has completed his course, in Latin, in the College. This preparatory course will meet the desires of many students, and particularly those from schools in the country, where their classical studies have been of necessity partial and interrupted.

The number of students now in my department is as follows:

COLLEGE CLASSES. 1877-78.

*Latin and Greek.*

First year's class.....	11	
Second year's class.....	3	
	—	14

*Elementary Latin.*

First year's class.....	17	
Second year's class.....	8	
	—	25

Total .....	39
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The class-room is well stocked with maps and charts, and the library contains some valuable works of reference, though more might be profitably added. The value of photographs of ancient art and ancient life has long been recognized, and no college class-room is considered complete without a few attractive pictures of the Greek and Roman master-

pieces of architecture and sculpture. The heliotyping process has made such reproductions quite inexpensive, and I respectfully suggest that a small sum be laid out in photographs of this character.

With much respect,

J. R. SMITH,  
*Assistant Professor of Latin and Greek.*

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## MECHANICAL AND FREE-HAND DRAWING.

EDWARD ORTON, PH. D., *President*:

DEAR SIR: I beg to present my report for the past year. The interest in this department has steadily increased. One hundred and three (103) students have availed themselves of the facilities provided for work in the following branches: Mechanical, free-hand, and architectural drawing, lettering, linear perspective, drawing from plaster casts in chalk, in stump and in neutral-tint, drawing from plaster direct on stone, flower drawing and coloring from nature, pictorial lithography, printing and print coloring, photography and photo-printing. Lithographic transfer writing and printing (diagrams and maps) have been executed by students for Chemistry, and English and Modern Languages. Diagrammatic work in oil has been done for Chemistry, Geology, and Military Science; also a series of large maps for my own use in geographical drawing class. Tablet writing, etc., has been furnished to other departments.

The improvement in student's work is very satisfactory. We require larger lithographic stones, more advanced and larger plat studies, landscape and figures; also a box of mathematical instruments.

I am, with great respect,

THOMAS MATHEW.

# CIRCULAR AND CATALOGUE.

# FACULTY.

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EDWARD ORION, PH D.,

*President, and Professor of Geology.*

T. C. MENDENHALL, A.M.,

*Professor of Physics and Mechanics.*

SIDNEY A. NORTON, A.M., M.D.,

*Professor of General and Applied Chemistry.*

JOSEPH MILLIKIN, A M.,

*Professor of the English Language and Literature, and of the French and German Languages.*

NORTON S. TOWNSEND, M.D.,

*Professor of Agriculture.*

R. W. MCFARLAND, A.M.,

*Professor of Mathematics and Civil Engineering.*

ALBERT H. TUTTLE, M.Sc.,

*Professor of Zoölogy and Comparative Anatomy.*

LUIGI LOMIA,

First Lieut. Fifth Artillery. U. S. A.

*Professor of Military Science and Tactics, and Adjunct Professor of Mathematics.*

JOHN A. CHURCH, M.E.,

*Professor of Mining and Metallurgy.*

JOSIAH R. SMITH, A.B.,

*Assistant Professor of the Latin and Greek Languages.*

THOMAS MATHEW,

*Instructor in Free-hand and Mechanical Drawing.*

ALICE WILLIAMS,

*Assistant in Department of Modern Languages.*

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JOSIAH R. SMITH, A.B., *Librarian.*

## ORGANIZATION AND EQUIPMENT.

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The Ohio Agricultural and Mechanical College is founded on the Congressional land grant of July, 1862. By that act a large amount of the public land was turned over to the several States, the proceeds of the sales to be devoted to the better education of the industrial classes. The share of each State was proportioned to its representation in the National Legislature, and thus six hundred and thirty thousand acres came into the possession of Ohio. This munificent gift was unfortunately pressed for sale upon a temporarily overstocked market, and the State realized only fifty-four cents to the acre. The total amount of the sales (\$342,450) was, however, put at interest, and when the College was opened in September, 1873, the principal and interest together constituted a productive fund of something over \$500,000, the annual income from which slightly exceeds \$30,000.

The Legislature having passed an act to authorize the several counties of the State to raise money to secure the location of the College, an offer of \$300,000 from Franklin county was accepted by the Board of Trustees, and the College was permanently located at Columbus. The money furnished by Franklin county has been mainly expended in the three following items: 1. The purchase of a valuable farm of three hundred and twenty acres within the corporate limits of the city of Columbus. 2. The erection of a spacious and elegant college building and two dormitories for students. 3. The equipment of the various departments of instruction in the College.

The total value of endowment and property at the present time exceeds \$1,000,000.

The departments already established, and the provisions made for giving instruction in them, are as follows:

### I. PHYSICS AND MECHANICS.

For these subjects ample provision has been made in the equipment of the institution. It is safe to say that in the opportunities afforded for thorough study in them, the College already surpasses most of the institutions of the country. Its laboratory is supplied with expensive and well-selected apparatus, designed not only for illustration, but also for



original research in all the leading divisions of the science. Students are directed to its use in the way of investigation as soon as they are properly prepared to undertake such work.

## II. CHEMISTRY.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy.

The course in Quantitative Chemistry includes both the volumetric and gravimetric methods. The student will also be assisted in any special branch of the science that he may desire, and take up in detail topics which relate to pharmacy, medicine, agriculture, and other sciences in which the principles of chemistry are applied.

## III. ZOÖLOGY.

The subject of Zoölogy, as its growing importance well deserves, has been assigned to a distinct professorship, and means have been provided for making the instruction in this subject thorough, practical, and extensive. A large amount of material, selected with special reference to its availability in teaching, has already been accumulated.

A dissecting-room, with abundant material for the thorough study of veterinary anatomy, is also furnished, while for practical training in microscopy there have been supplied eight microscope stands, representing all the principal modes of construction, and nineteen objectives, giving powers up to 2,500 diameters.

## IV. BOTANY.

Permanent provision has not yet been made for this subject, but the Professor of Agriculture will give instruction in it for the present. By the will of the late William S. Sullivant, Esq., the ample library of this distinguished botanist has come into possession of the College. It contains not only all of the standard treatises on the subject, but many rare and valuable works—as the *Icones Muscorum*, the *Flora Braziliensis*, etc., etc. An herbarium, representing quite completely the flora of Ohio, is accessible to the student, and charts and models illustrating vegetable structure are provided.

## V. GEOLOGY.

The College is able to present unusual advantages for the study of Geology. By act of the Legislature it has been put in possession of all the collections made by the State Geological Survey during its five years of service, and these collections have been supplemented by valuable

additions of fossils and minerals from various sources. The State collection embraces a very complete representation of every geological formation shown in Ohio.

#### VI. AGRICULTURE.

The department of Agriculture, which also includes the *diseases of animals* and their *medical and surgical treatment*, is provided for in a distinct professorship, the aim of which is to acquaint the student with the theory and practice of a truly rational system in this most important field. The course extends through two years, and is rendered practical by being constantly connected with the work that is carried on upon the farm. Numerous opportunities are afforded to the students in veterinary medicine of observing the treatment of diseased animals.

#### VII. MATHEMATICS.

Under the two professorships that divide the work of mathematics between them, a full course of instruction is provided for, including also the subject of astronomy. A term is given to trigonometry, and one and a half terms are given to each of the two subjects, analytical geometry and calculus. The work of several of the other departments, especially civil engineering, physics and mechanics, and chemistry, require the constant and practical application of the knowledge acquired in mathematical study. A term is given to astronomy, but no special facilities have thus far been furnished in this subject.

#### VIII. CIVIL ENGINEERING.

This course, which extends through two years, includes surveying, location and construction of roads and railroads, construction of bridges, strength of materials, geodesy, etc. The time of one professor is chiefly devoted to this department. Field work is extensive and varied, for the execution of which a full set of engineering instruments of the finest construction is provided.

#### IX. ENGLISH, FRENCH, AND GERMAN LANGUAGES.

In the organization of the College, special prominence is given to the modern languages. Some of the students who resort here will study no language but their own, and it is, therefore, imperative that the opportunities for training in English should be made ample, while all who expect to attain any good degree of proficiency in the natural sciences must certainly acquaint themselves with French and German.

The course of study in the English Language and Literature has been made especially complete—as full and thorough as any offered in the

colleges of the country. Rhetorical training of all students in the regular courses is also included here.

French and German can be pursued in courses as extensive as the needs of the student may require.

#### X. LATIN AND GREEK LANGUAGES.

Ample provision is also made for the study of the Latin and Greek languages, not only in compliance with those terms of the organic law of the College which forbid the exclusion of classical studies, and which declare one of the aims of the institution thus endowed to be "the liberal education of the industrial classes," but also because of the great advantage which such study gives in acquiring a thorough knowledge of our own and other modern languages; and in the last place, but not the least important, because of the relations which they bear to literary, historical, and scientific studies.

#### XI. MECHANICAL AND FREE-HAND DRAWING.

Instruction in these subjects have been provided for in the College, and all needful facilities are furnished by which those who wish may acquire skill in the several departments of Drawing.

Practical lithography and photography are also taught in this department, all the necessary apparatus being placed at the student's disposal.

#### XII. MILITARY SCIENCE AND TACTICS.

In accordance with an act of Congress, an officer of the United States Army has been detailed by the War Department to give instruction in the subjects named above. The subject of Military Science is taught in recitations and lectures to such students as elect it. Military drill is made obligatory upon all male students except those that are excused on the grounds of physical disability or conscientious scruples. The time devoted to drill at present is two and one-half hours per week.

#### XIII. MINING AND METALLURGY.

Instruction in these important subjects will be at once begun. A laboratory has already been equipped with every facility for doing the necessary work in the analysis of ores and fuels. Materials have been purchased for a full illustration of the course in mineralogy, and models and plans of various forms of furnaces have been secured. The mining of coal, and the manufacture and working of iron, will be the leading subjects in this department.

# DEGREES AND COURSES OF STUDY

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Four degrees are offered by the College—two general, viz., Bachelor of Arts (B A ), and Bachelor of Science (B.S.); and two special, viz., Civil Engineer (C.E.), and Mining Engineer (M E.).

In addition to these degrees, certificates of work done in the several departments will be granted as hereafter stated.

## PRELIMINARY COURSE.

For students who desire to complete a full course of study, and to receive any of the degrees of the College, the following general scheme has been established. When admitted to the College, they shall enter upon a prescribed course of study, which occupies two years. The aim has been to include in this two-years' course those branches of which no educated person can afford to be ignorant, and at the same time to lay a proper foundation for all subsequent study. This course is constituted as follows :

### FIRST YEAR.

First Term—Human Physiology, English Language, Algebra.

Second Term—Physical Geography, Zoölogy, Geometry.

Third Term—Systematic Botany, Algebra, Zoölogy.

### SECOND YEAR.

First Term—Physics, Chemistry, Geology.

Second Term—Physics, Chemistry, Geometry.

Third Term—Physics, Chemistry, Plane and Spherical Trigonometry.

History throughout the year.

It is believed that when the student has completed the above-named course, his judgment and taste will be so formed that he can decide intelligently upon the particular line in which his study shall henceforth lie. A large liberty is therefore accorded to him in his subsequent college work.

## ADVANCED COURSES.

The remaining studies of each department of the College, with the exception of Mathematics, are thrown into two-years' courses of daily recitations, and six of these courses (or their equivalents) are necessary for graduation.

Furthermore, the departments of the College are divided into three schools, termed respectively—

I. *The School of Exact Sciences*, embracing Mathematics, Civil Engineering, Physics and Mechanics, Chemistry, Mining and Metallurgy.

II. *The School of Natural History*, embracing Botany, Zoölogy, Geology, and Agriculture.

III. *The School of Letters and Philosophy*, embracing the English Language and Literature, German Language and Literature, French Language and Literature, Latin Language and Literature, and Greek Language and Literature.

The only restriction upon the liberty of the student who seeks one of the general degrees, in the remainder of the courses, is that one of the six required courses shall be taken from each of the schools above named.

If he is a candidate for the degree of B.A., the remaining three courses shall be selected from the School of Letters.

If a candidate for the degree of B.S., he must make his selection of the three additional courses from the Schools of Natural History and Exact Sciences.

The order of studies for these degrees is shown in the appended schedule :

1. *For the Degree of Bachelor of Arts.*

First year.....	Language.	Exact Science.	Natural History.
Second year .....	Language.	Exact Science.	Natural History.
Third year .....	Language.	Language.	Language.
Fourth year .....	Philology.	Letters and Philosophy.	Letters and Philosophy.

2. *For the Degree of Bachelor of Science.*

First year.....	Exact Science.	Natural History.	Language.
Second year .....	Exact Science.	Natural History.	Language.
Third year .....	Natural History.	Natural History or Exact Science.	Exact Science.
Fourth year .....	Natural History.	Natural History or Exact Science.	Exact Science.

One year in each of two courses may, with permission of the Faculty, be counted an equivalent for a two-years' course in one. Six of these courses will, with three daily

recitations, occupy four years. If the number of daily recitations is increased, the time occupied for the completion of the work assigned will be correspondingly reduced.

For the degree of Civil Engineer, the following course and order of studies is required :

First year.....	Mathematics.	Geology.	French.
Second year.....	Mechanics.	Chemistry.	French.
Third year .....	Civil Engineering.	Chemistry.	Physics.
Fourth year.....	Civil Engineering.	Geology.	Physics.

For the degree of Mining Engineer, the course of studies is as follows :

First year.....	Mathematics.	Chemistry.	German.
Second year .....	Geology.	Chemistry.	German.
Third year .....	Geology.	Mining and Metallurgy.	Physics.
Fourth year .....	Civil Engineering.	Mining and Metallurgy.	Physics.

A student who has taken a degree, can take any other, by completing the additional work required for such degree.

The range of instruction proposed in the several departments can be learned from the appended statements :

## THE SCHOOL OF EXACT SCIENCES.

### MATHEMATICS.

#### ONE YEAR.

First Term—Analytical Geometry of two dimensions.

Second Term—Analytical Geometry of three dimensions; Differential Calculus.

Third Term—Integral Calculus.

## CIVIL ENGINEERING.

## FIRST YEAR.

First Term—Surveying, Navigation.

Second Term—Descriptive Geometry, Isometric Drawing, etc.

Third Term—Astronomy, Shades, Shadows, and Perspective.

## SECOND YEAR.

First Term—Locating and Constructing Roads, Railroads, etc.

Second Term—Mahan's Civil Engineering, Strength of Materials, etc., Geodesy.

Third Term—Bridges and Bridge-Drawing, Stone-cutting, Walls, Arches, etc.

*Text-Books.*—The works of Loomis on Algebra, Geometry, and Astronomy. In parts of the course, works by Davies, Warren, Church, Gillespie, Mahan, Haupt, Worthen, and others.

The parts of Chemistry, Physics, and Geology especially pertaining to Civil Engineering are studied under the direction of the professors in those departments.

In addition to the use and study of the text-books, the students are taught and practiced in the use of various astronomical and engineering instruments—the level, the transit, the plane-table, the sextant, the globes. They have practical field-work throughout the year, excepting only when the inclemency of the weather does not admit of it. The work consists in taking difference of level, running lines, measuring horizontal and vertical angles, determining the variation of the magnetic needle, finding the latitude by the pole-star and by meridian altitudes of the same; in fine, every variety of appropriate work which can be executed, is regularly, systematically, and thoroughly done.

## PHYSICS AND MECHANICS.

## FIRST YEAR.

First Term—Mechanics.

Second Term—Acoustics and Optics.

Third Term—Optics.

## SECOND YEAR.

First Term—Heat.

Second Term—Heat and Electricity.

Third Term—Electricity.

There will be, in addition, an advanced course in Mechanics, comprising one year of laboratory work in the Mechanics of Solids, Liquids and Gases, Strength of Materials, Elements of Machine, etc., combined with the study of Statics and Dynamics, and including the last year of the course in Physics.

Throughout the whole course, the work will be very largely done in the laboratory, and opportunity will be afforded for special study in any direction coming within the range of the department.

*Text Books.*—Deschanel's Physics, Todhunter's Mechanics, Stewart's Heat, Maxwell's Theory of Heat, Pickering's Physical Manipulations, Kohlrausch's Physical Measurements.

## II. CHEMISTRY.

All students who wish to obtain a degree are required to study Chemistry for one year. During this year General Chemistry, together with its most important applications to the arts, is taught by the use of text-books and of lectures, illustrated by an

ever-growing collection of the materials used in manufactures, and by a very complete suite of experiments.

At the end of the year, those who desire to devote special attention to Chemistry enter the analytical laboratory, where they can carry on their work for two years or more.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy. He is also employed in making various compounds, and, if his time permits, studies exhaustively one or more of the elements and its important compounds.

The course in Quantitative Chemistry includes both the gravimetric and volumetric methods. The analyses are at first confined to those compounds whose structure is known, and afterwards extended to such bodies as the student may require in the special branch of the science to which he desires to devote himself. Opportunity is offered for the study of coals, minerals, fertilizers, soils, or of the useful and waste products in manufactures.

If the student desires, he will also be assisted in taking up in detail topics which relate to Agriculture, to Pharmacy, to Medicine, and to other sciences, or to arts in which the principles of chemistry are applied.

A summary of the course is given below :

### IN THE REQUIRED COURSE.

#### GENERAL CHEMISTRY—ONE YEAR.

Inorganic and Organic Chemistry, and the applications of Chemistry to the Arts.

### IN THE SPECIAL COURSE.

#### FIRST YEAR.

First Term—Qualitative Analysis: Reactions of Single Bases and Acids, Exercises in Blow-pipe and Flame Reactions.

Second Term—Qualitative Analysis continued: Determination of Mixtures, Blow-pipe Mineralogy, Preparation of Compounds.

Third Term—Quantitative Analysis, Stoichiometry.

#### SECOND YEAR.

Quantitative Analysis: Special studies in Chemistry applied to Pharmacy, to Agriculture, to Manufactures, and to the Arts.

*Text-Books.*—Bloxam's Chemistry, Beilstein's Manual, Galloway's Qualitative Chemistry, Will's Qualitative Chemistry, Thorpe's Quantitative Chemistry, Fresenius's Quantitative Chemistry, Caldwell's Agricultural Chemistry.

*Books of Reference.*—Watt's Dictionary of Chemistry, Gmelin's Hand-Book of Chemistry, Wagner's Chemical Technology, Graham-Otto's Chemie, Rose's Analytischen Chemie, Gorup-Besanez's Physiologischen Chemie, Elderhorst's Determinative Mineralogy.

## THE SCHOOL OF NATURAL HISTORY.

### BOTANY.

#### FIRST YEAR.

First Term—Structural and Physiological Botany.

Second Term—Structural and Physiological Botany.

Third Term—Systematic Botany. (Phænogamia.)



## SECOND YEAR.

First Term—Systematic Botany. (Gramineæ and Cryptogamia.)

Second Term—Economic Botany, or Botany as applied to the Arts.

Third Term—Economic Botany, as applied to Garden, Field, and Forest Culture.

*Text-Books and Books of Reference.*—Gray's Botanical Text-Book, Loudon's Encyclopedia of Plants, Paxton's Botanical Dictionary, Lowe's British Grasses, Berkeley's Cryptogamic Botany, Cooke's Hand-Book of British Fungi, Darlington's American Weeds and Useful Plants.

## GEOLOGY AND PALEONTOLOGY.

In the required course which all regular students are obliged to complete before entering on the work of the schools, one term is given to each of the two subjects, Physical Geography and Elementary Geology.

For further study in this department, a knowledge of the elements of Chemistry and Physics is necessary. It is, therefore, required, that students shall complete the study of these subjects in the required course before entering upon advanced work in Geology.

## FIRST YEAR.

First Term—Lithological and Historical Geology, including the Elements of Paleontology.

Second Term—Geology of Ohio.

Third Term—Historical Geology and Paleontology completed.

## SECOND YEAR.

First Term—Economical Geology: Building-stones, Limes, and Cements.

Second Term—Economical Geology continued: Fire-clays, Petroleum, and Salt.

Third Term—Relations of Geology to Soils and Water Supply.

Instruction in this department is given by lectures, text-books, and field practice.

The subject of Lithological Geology is taken up in lectures. The student is taught to recognize, promptly and certainly, at least twenty species of the minerals most commonly met with, and also ten to fifteen of the rock formations that are most abundant. The chemical composition of minerals and rocks is discussed, and such of the students as are working in the chemical laboratory are expected to make qualitative and, if possible, quantitative analyses of some of the specimens which they meet with in their geological study.

Stratigraphical Geology is taught by field practice and lectures. The student is made thoroughly acquainted with the various rock exposures that are readily accessible from Columbus, and is taught how to recognize in the field, and how to represent in sections and upon maps, the various facts with which he meets.

The orderly series of Ohio formations gives but little opportunity to observe and determine the "dip" of strata, and none to investigate the phenomena of "faults," which make so important an element in geological work generally. These subjects, therefore, are treated of in lectures.

The Geology of Ohio is also taught in lectures. The museum of the College contains every thing necessary to make the student familiar with our geological scale in all its essential elements.

In Historical Geology generally, Dana's Manual is used as a text-book, the recitations in it being interspersed with lectures whenever particular subjects seem to require fuller treatment than the text-book furnishes. In Paleontology enough is done to enable the

student to determine the general geological horizon of any field. The characteristic fossils of the various periods are studied until they have become easily recognizable.

*Text-books and Works of Reference.*—Dana's *Mannual of Geology*, Jukes' *Manual of Geology*, Lyell's *Student's Elements of Geology*, Lyell's *Principles of Geology* (11th edition), Nicholson's *Manual of Paleontology*, *Geological Reports of Ohio and other States*, Bischof's *Chemical Geology*.

## ZOOLOGY AND COMPARATIVE ANATOMY.

Two courses of study are offered in this department—one in Zoölogy, and one in Anatomy and Physiology.

### ZOOLOGY.

#### FIRST YEAR.

First Term—Mammals.

Second Term—Birds, Reptiles.

Third Term—Amphibia, Fishes.

#### SECOND YEAR.

First Term—Arthropods, Mollusks.

Second Term—Echinoderms, Worms.

Third Term—Cœlenterata, Polystomata, Protozoa.

The first year of this course is devoted entirely to the Vertebrates, their Anatomy, Classification, Distribution, etc. The first term of the second year is given largely to the study of the structure and life-history of Insects; the second term is in great part spent upon the Parasitic Worms—a group of organisms of great interest, both scientifically and practically. The work of this year is performed chiefly in the Laboratory.

No special text-book is used. The following are some of the books of reference accessible to the student: Owens' *Anatomy of Invertebrates*, Huxley's *Anatomy of Invertebrates*, McCalister's *Invertebrate Morphology*, Siebold's *Anatomy of Invertebrates*, Rolleston's *Forms of Animal Life*, Packard's *Guide to the Study of Insects*, Dana's *Crustacea*, Cobbold's *Entozoa*, Woodward's *Mollusca*, Dana's *Zoöphyta*, Pritchard's *Infusoria*, Wallace's *Geographical Distribution of Animals*.

## COMPARATIVE ANATOMY AND PHYSIOLOGY.

#### FIRST YEAR.

First Term—Anatomy, Human and Comparative.

Second Term—Anatomy, Human and Comparative.

Third Term—Microscopy and Histology.

#### SECOND YEAR.

First Term—Physiology: Recitations.

Second Term—Physiology: Recitations.

Third Term—Physiology: Recitations.

This course, while intended for general students also, is especially adapted to the wants of young men who look towards the profession of medicine and surgery, either Human or Veterinary. The work of the first two terms of the first year is largely performed in the dissecting room, and in the study of the admirable models of the human body, made by Anzoux, of Paris. Mivart's *Anatomy* is used as a text-book. The third term is spent in the Laboratory, over the microscope. Schäffer's *practical Histology* is

used as a hand-book. The second year is spent in the study of Foster's Text-book of Physiology. It is to be hoped that before long a part of this year may be spent in Laboratory work.

The following, amongst others, are books accessible to the student: Owen's Anatomy of Vertebrates, Huxley's Anatomy of Vertebrates, Cuvier's Anatomie Comparée, Flower's Osteology, Parker's Monograph of the Shoulder-Girdle, Parker on the Skull, Cuvier's Atlas of Myology, Milne-Edwards's, Flint's, Carpenter's, and Küss's Physiology, Stricker's, Frey's, Beale's, Kolliker's, and Rutherford's Histology, Foster's Practical Physiology, Foster, Klein, and Brunton's Hand-Book for the Physiological Laboratory.

The department is also open to special students who desire to pay particular attention to any one subject, for the study of which they are prepared. Students who desire to acquire a thorough knowledge of the anatomy of the domestic animals, will have the use of the dissecting-room, which will be kept supplied with material. Chauveau's Anatomy of the Domestic Animals is used as a manual. Special facilities are afforded young men who desire to read Human Anatomy before entering upon the work of the dissecting-room in the Medical School. Gray's Anatomy is used as a text-book.

## AGRICULTURE.

### FIRST YEAR.

First Term—Soils are made a subject of examination, their geologic relations and origin are explained, their composition is shown, and how it is determined; the special adaptations of Soils to particular crops and modes of culture is shown, and how to increase or restore exhausted fertility; the management of pastures and meadows; the character and value of the different grasses, clovers, and other forage plants; the culture of field crops, such as corn, wheat, oats, barley, rye, potatoes, etc.; also, the value and application of animal manures, marl, gypsum, wood-ashes, lime, superphosphate, guano, and city sewage.

Second Term—Work of the farm and improvements, plowing, harrowing, rolling, drilling, sowing, planting; Drainage, stone-drains, tile-drains, mole-drains, leveling-instruments, draining-tools, and the manufacture of drain-tiles; Irrigation, its value and methods; Farm Roads, and how to make them; Fences, material, construction, and cost; Rural Architecture, applied to the erection of farm-houses, barns, stables, etc.; Farm Machinery, plows, harrows, cultivators, rollers, drills, mowers, reapers, thrashers, pumps, wind-mills, etc.

Third Term—Orchards and Fruit trees; Vineyard and their management; Gardening for profit, ornamental and landscape gardening; Hedges, planting and trimming, and cost compared with other fences; Forestry, the value of timber, preservation of timber, and tree planting.

### SECOND YEAR.

First Term—The natural history, description, and adaptation of the various domestic animals—horse-training, cattle-feeding, dairy management, wool-growing, etc.

Second Term—Veterinary Medicine, General Principles, Causes, Symptoms, Elements of Disease; Classification of Diseases, Principles of Treatment, and Remedial Agents.

Third Term—Particular Diseases and Operations. These are carefully studied, and, so far as opportunity can be obtained, diseases are treated, and operations made, under the inspection of the class.

## ENGLISH AND MODERN LANGUAGES.

## ENGLISH.

It is now past dispute, that the thorough understanding of the language and literature of the present, requires knowledge of the language and literature of England, in its various periods, beginning with the very beginning—Anglo-Saxon. The following course is, accordingly, a progressive, historical course. The readings of the first year extend through the Shakspearean period, the last *formative* period alike for English speech and English literary forms. Parallel with these text-readings (in which the classics selected are treated precisely as Latin and Greek texts are treated), are lectures historical and critical upon the literature. Rough notes are taken in the class-room; these are afterwards elaborated; and recitations upon them are made as if from a text-book.

Rhetoric and logic come in the second year—rhetoric as an aid to original writing, as well as just criticism and enjoyment of others' productions; and logic, primarily, as the indispensable foundation and ever-present, though often hidden, factor in all good writing; secondly, for its bearing upon the several sciences and sorts of research taught in the College; thirdly, as an introduction to philosophical reading; fourthly, as a mental discipline, than which there is none better.

Along with this, go lectures upon more recent literature.

## FIRST YEAR.

First Term—Anglo-Saxon: Sweet's Anglo-Saxon Reader; Lectures on the Literature of the Anglo-Saxon Period.

Second Term—Anglo-Saxon continued; Early English: Sweet's Vision of Piers Plowman; Lectures on Early English Literature.

Third Term—Later English: Shakspeare—Select Plays; Lectures.

## SECOND YEAR.

First Term—Rhetoric: Hepburn's Manual, with Exercises; Lectures on English Literature.

Second Term—Rhetoric finished; Logic: Jevon's Elements, with Lectures.

Third Term—Logic finished; Lectures on Contemporary Literature.

*Books Recommended for Reference.*—Marsh: Lectures on Origin, and History of English Language; Lectures on English Language and Literature; Taine's, and Craik's Histories of English Literature; Morris: English Accidence; Grein: Angelsächsische Bibliothek; Earl: Philosophy of the English Tongue. .

## GERMAN AND FRENCH.

In view of the fact that mental training is a chief aim of every part of a college course; that, for purposes of literary culture, the main thing a college can give is the easy reading and accurate understanding of the masterpieces of the language studied; and that in an institution in which the sciences are so prominent as they are with us, it is of the utmost importance that the ability to use foreign text-books and works of reference be acquired as soon as possible, the so-called "Conversational Method" is not employed, and "learning to speak" French and German is an incident rather than an

aim of the course. This is of purpose, and according to the best college usage and authority. I believe, too, that the careful and continuous use of the grammar, lexicon, and well-chosen text is the only sure and usually the shortest road to accurate and fluent speech. Where small classes, with little else to do, can spend several hours each day with the teacher, a different method will often succeed; but in a college, and to meet the ends of a college, more and better results are secured by the grammatical and literary method. Give the student an accurate knowledge of the inflections and syntax of a foreign language; make him master of a full and idiomatic vocabulary of its words; let the reading of varied and well-selected texts teach him the peculiarities alike of the thought and rhythm of the speech of the men whose works he studies; accustom him to the oral and written rendering of the foreign text into English, and of English texts into foreign, and he will be no longer helpless in presence of a foreign poem or book on chemistry, and learning to speak, and speak well, will be easily acquired, and, when acquired, remembered.

In both the French and German course, the student attends mainly to grammatical doctrine, and word for word versions and exercises at first, and to the literary characteristics and contents of what he reads as he progresses. In the second year, courses of lectures upon the respective literatures are delivered.

### GERMAN.

#### FIRST YEAR.

First and Second Terms—Whitney's Grammar and Reader.

Third Term—Schiller: *Der Neffe als Onkel*; Exercises in Composition.

#### SECOND YEAR.

First Term—Goethe's *Egmont*; Lessing: *Nathan der Weise*; Lectures on Early German Literature.

Second Term—Lessing: *Nathan der Weise* finished; Richter: *Quintus Fixlein*; Lectures on Literature.

Third Term—Richter: *Quintus Fixlein* finished; Lectures.

*Books of Reference.*—Vilmar: *Deutsche Literatur-geschichte*; Wackenagel: *Geschichte der Deutschen Literatur*; Simrock; *Nibelungen-Lied*, in *Modern German*; Grimm: *Deutsche Mythologie*; Gostwick and Harrison: *Outlines of History of German Literature*.

### FRENCH.

#### FIRST YEAR.

First Term—Duffet: *French Grammar and Exercises*.

Second Term—Grammar continued; Masson's *French Classics*, vol. 5.

Third Term—French Classics continued.

#### SECOND YEAR.

First Term—Moliere: *Les Fourberies de Scapin*; Racine: *Athalie*.

Second Term—Corneille: *Cinna*; Racine: *Andromaque*; Bridge's *History of French Literature*.

Third Term—Feuillet: *Le Roman d'un jeune homme pauvre*; Bridge's *History* continued.

*Books of Reference.*—Brachet: *Grammaire Historique*; Chevallet: *L'Histoire de la langue Francaise*; Vinet: *L'Histoire de la literature, du xviiieme Siecle*; Parton: *The French Parnassus*; Van Laun: *History of French Literature*.

## LATIN LANGUAGE.

The course in Latin embraces two years of elementary work, and two years of regular college work. The elementary course is designed mainly for beginners, and those who have suffered from the lack of regular training, and thus can not compete successfully in the advanced course with those who have been systematically taught in high schools. It is arranged as follows:

### ELEMENTARY LATIN.

#### FIRST YEAR.

First Term—Leighton's Latin Lessons.

Second Term—Leighton's Latin Lessons completed; Cæsar's Commentaries, Book I.

Third Term—Cæsar's Commentaries, Books II and III.

#### SECOND YEAR.

First Term—Virgil's *Æneid*, Books I, II, and III.

Second Term—Virgil's *Æneid*, Book IV; Cicero *In Catilinam* I, II.

Third Term—Cicero *In Catilinam* III, IV; *Pro Archia Poëta*.

Allen and Greenough's Latin Prose Composition is used throughout the year, in weekly exercises, and Allen and Greenough's Latin Grammar is used through the entire course.

### ADVANCED COURSE.

#### FIRST YEAR.

First Term—Livy, Selections; History of Rome.

Second Term—Livy, continued.

Third Term—Horace, *Odes*.

During the year lectures are given on Roman History and Antiquities, and the reading of the authors is accompanied with exercises in Latin prose composition (weekly) and in written translation.

#### SECOND YEAR.

First Term—Horace, *Satires*, *Epistles*, and *Ars Poetica*.

Second Term—Tacitus, *Agricola* and *Germania*.

Third Term—Terence, *Andria* and *Adelphæ*; Quintilian, *Institutio Oratoria*.

Lectures are given during the year on Latin Literature and Philology.

*Admission*.—Candidates for the first-year class will be examined as follows: In Latin Grammar (Allen and Greenough's is preferred); writing Latin; three books of Cæsar's *Commentaries*; Orations of Cicero; and four books of Virgil's *Æneid*.

## GREEK LANGUAGE.

#### FIRST YEAR.

First Term—Xenophon, *Memorabilia*; Plato, *Phædo*.

Second Term—Herodotus, Selections; History of Greece.

Third Term—Euripides, *Alceste*.

Lectures are given during the year on Greek History, Antiquities, and the Drama.

#### SECOND YEAR.

First Term—Homer, *Odyssey*.

Second Term—Sophocles, *Œdipus Tyrannus*.

Third Term—Æschylus, *Prometheus Vinculus*; Demosthenes, *De Corona*.

Lectures are given during the year on Greek Literature and Philology. Exercises in Greek prose composition (weekly), and in written translation constitute an important feature of the course.

*Admission.*—Candidates for the first-year class will be examined as follows: In Greek Grammar (Goodwin's is preferred); in writing Greek, with the accents; and the first one hundred and eleven pages of Goodwin's Greek Reader (or three books of Xenophon's *Anabasis*.)

#### PROVISIONS FOR SPECIAL STUDENTS.

To students entering the College for the purpose of taking some special study, and who do not propose to complete a regular course, *full freedom in the selection of the branches which they will pursue is granted, subject only to the necessary limitation that they are prepared to take up with advantage the studies which they select.* They will enter the classes organized for the regular courses, and they can not be allowed to impair the quality of work done in the classes through their own inadequate preparation. Advanced students will find every facility for special work.

#### SPECIAL COURSE IN AGRICULTURE.

The College recognizes its obligations—imposed in the terms of the grant to which it owes its existence—to the great industrial interest of Agriculture. This obligation it has aimed to meet in the establishment of departments for thorough training in those branches of science upon which agriculture depends, and also in fixing its standard of admission so that students may enter its college classes from the common schools.

To the question, what education it proposes to furnish to the farmer, it may be answered, that such a course as would secure the Degree of Bachelor of Science from the College could be made to include all of the branches which in reality constitute agriculture, and, as far as theoretical instruction goes, could scarcely be improved in its adaptations to the necessities of the American farmer.

But this course requires for its completion six years from the common school, and there is good ground to fear that a young man who has been withdrawn for six years from the farm will scarcely return to it again. For the training, then, of the most of those who intend to devote themselves to practical agriculture, a scheme requiring less time must be found. In accordance with this view, a three-year's course has been established, and is hereby submitted, which, it is believed, combines the general and the special as fairly as may be, and which offers to the young farmer a very practical and serviceable range of study. This course is shown in the appended schedule:

##### FIRST YEAR.

First Term—Human Physiology, English Language, Algebra.

Second Term—Physical Geography, Zoölogy, Geometry.

Third Term—Systematic Botany, Zoölogy, Algebra.

##### SECOND YEAR.

First Term—Physics, Chemistry, Geology.

Second Term—Physics, Chemistry, Geometry.

Third Term—Physics, Chemistry, Plane Trigonometry.

History throughout the year.



THIRD YEAR.

First Term—Zoölogy, Agricultural Chemistry, Practical Agriculture.

Second Term—Diseases of Animals, their Medical and Surgical Treatment; Agricultural Chemistry, Practical Agriculture.

Third Term—Diseases of Animals, their Medical and Surgical Treatment; Practical Agriculture; Surveying.

It will be observed that this scheme agrees for two years with the prescribed course already given, while the third year supplements that course in as practical a manner as possible, and adapts it to the demands of this particular calling. In the strictly agricultural part of the course, practice will be constantly combined with theory, and the student will thus retain familiarity with the life from which he has come, and to which he expects to return.

TRAINING FOR TEACHERS AND STUDENTS IN MEDICINE.

The advantages offered by the College in the training required for two callings, in particular, are so great that special attention is invited to them. To students fitting themselves to become teachers of Natural Science, and also to those designing to pursue the study of Medicine, courses of study could not be more perfectly adapted, if they were designed expressly for such service. The resources of the College in the way of collections, and the methods of study adopted in the more advanced classes—the work being mainly done in laboratories and museums—make it safe to say that a very important addition to the educational facilities of the State is here made.

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All students are required to take three daily recitations or their equivalent in laboratory work.

Certificates will be furnished to those who complete either the work of the Agricultural course, or of any special department.



## ADMISSION.

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For admission to the College, students must possess a competent knowledge of the branches taught in the common schools, viz.: Reading, Orthography, Writing, Grammar, Geography, Arithmetic, and of Algebra through simple equations.

The attention of those proposing to enter the College is especially directed to the terms above given. A competent knowledge of the common school branches is required. The College does not undertake to do the work which the common schools are able and willing to do, viz.: that of grounding the student in the elements of an English education. He must bring with him a fair measure of the training which these schools are prepared to give. If it be asked what is a competent knowledge of these branches, it may be answered that the candidate should certainly have knowledge enough of them to entitle him to a teacher's certificate from a county board of examiners.

Advanced standing will be granted to students upon their sustaining examination in any part of the course, prescribed or elective.

Graduates of the high schools of the State, and persons holding teachers' certificates of the eighteen months' grade, are admitted without examination.

It is, however, to be borne in mind that the amount of work done in several branches of science in the required course of the College, and the quality of work done in all, by reason of the superior facilities provided, render these studies quite different from those that are known by the same name in the schools of the State. Physics and Chemistry, for instance, each occupies a year of daily recitations, while Botany, Physiology and Zoölogy are able to avail themselves of all the resources of their respective departments. All students, therefore, are earnestly advised on entering the College to shape their work by the required course; in other words, to adopt this course as far as possible. Their studies are thus made consecutive, and a degree of symmetry is given to their education, so far as it is completed here. It is expected that many students will be able to enter the second year of this course.

Students entering from other colleges will be required to bring certificate of honorable dismissal.

EXPENSES.

A charge of \$5.00 a term, or \$15.00 a year, is made against all students, under the head of incidental expenses. *There is no charge for tuition in any department of the College;* but advanced students in Chemistry and Physics are required to pay fees to cover, in part, the cost of materials consumed, and the deterioration of the expensive instruments employed. The fee in the Chemical laboratory is \$10.00 per term, and in the Physical laboratory \$7.00 per term.

Two College dormitories have been provided, in one of which board and furnished rooms can be obtained at a charge of \$3.50 per week, two students occupying one room. If the student furnishes and takes care of his own room, he obtains board for \$3.00 per week.

Provision for lighting and heating the rooms must be made at the student's expense.

The College will supply coal for the present year at the following rates, viz :

For the Fall Term .....	\$1 50
For the Winter Term .....	2 50
For the Spring Term .....	1 00

*Board bills must be paid monthly in advance.*

In addition, the College charges each student \$4.00 per term, or \$12.00 per year, for room rent.

The second dormitory contains ten rooms, and is designed for students wishing to board themselves. The rooms are provided with stoves that can be used in cooking. They are designed for two occupants, each one being charged \$4.00 per term, or \$12.00 per year for room rent.

A deposit of \$5.00 is required at the beginning of every term from all students occupying rooms in the dormitories, as a guarantee against willful injury to rooms or halls. For damages in either dormitory that can not be traced to the individuals committing them, an assessment will be made upon the guarantee fund of the dormitory in which they occur. In case no assessment is made, the deposit will be returned at the end of the term.

By the action of the Board of Trustees, all College dues must be paid in advance, at the beginning of each term. Term bills receipted by the College Treasurer must be handed into the President, before the student's name can be entered on the class-rolls of the College.

A College uniform has been adopted with which all male students are required to provide themselves. The cost of the suit is about \$20.00.

The College is now connected with the central portions of the city by two street railroads. Board, with furnished rooms, can be obtained in private families within convenient distance of the College, at rates varying from \$4.00 to \$5.00.

Boarding clubs have been successfully organized by students during the last year, in which good board can be had for \$2.50 per week, or less.

#### SUMMARY.

The expenses of a term of twelve weeks will include the following items:

Incidentals.....	\$5 00
Room rent.....	4 00
Board in College dormitory .....	42 00
Washing, lights, etc .....	10 00
Total .....	<u>\$61 00</u>

Students boarding themselves reduce this aggregate by at least \$20.00.

#### CALENDAR.

The Winter term commences on Thursday, January 3, 1878, and continues twelve weeks, closing on Wednesday, March 27.

The Spring term commences on Thursday, April 4, and continues eleven weeks, closing on Wednesday, June 19.

The Fall term commences on Thursday, September 12, and continues fourteen weeks, closing on Wednesday, December 18.

For further information, address the President or any member of the Faculty, or the Secretary of the Board of Trustees.

# CATALOGUE OF STUDENTS.

NAME.	RESIDENCE.	COUNTY.
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## CLASS OF 1878.

Dietrich, Charles H.....	Defiance.....	Defiance.
Dun, Walter A.....	London.....	Madison.
Howald, Ferdinand.....	Columbus.....	Franklin.
Howard, Curtis C.....	Columbus.....	Franklin.
McFadden, John F.....	Cadiz.....	Harrison.
Townshend, Arthur B.....	Avon.....	Lorain.

## CLASS OF 1879.

Corwin, Edwin E.....	Columbus.....	Franklin.
Humphrey, J. Scott.....	Findlay.....	Hancock.
Morrison, M. Frank.....	Columbus.....	Franklin.
Noble, Warren F.....	Tiffin.....	Seneca.
Snyder, Henry, Jr.....	Springfield.....	Clarke.

## CLASS OF 1880.

McCormick, John H.....	Columbus.....	Franklin.
McMackin, Amasa B.....	Newcomerstown.....	Tuscarawas.
McQuigg, John.....	Pomeroy.....	Meigs.
Nutting, Myron E.....	Kent.....	Portage.
Short, Sidney H.....	Columbus.....	Franklin.
Towne, Robert S.....	Portsmouth.....	Scioto.
West, James P.....	St. Clairsville.....	Belmont.
Williams, John.....	Columbus.....	Franklin.

## CLASS OF 1881.

Bennett, Edwin M., Jr.....	Urbana.....	Champaign.
Burt, William.....	West Lafayette.....	Coshocton.
Hyatt, Edward.....	Angusta.....	Carroll.
Keffer, Mary.....	Cleveland.....	Cuyahoga.
Kelly, Thomas.....	McArthur.....	Vinton.
McClung, William E.....	Columbus.....	Franklin.
Myers, James F.....	Cincinnati.....	Hamilton.
Palmer, Charles O.....	Cleveland.....	Cuyahoga.
Seeley, Uri, Jr.....	Austinburg.....	Ashtabula.

## SECOND YEAR—PRELIMINARY COURSE.

Baker, Chauncey.....	Columbus.....	Franklin.
Bixler, Samuel J.....	Brookville.....	Montgomery.
Brossman, Charles E.....	Lithopolis.....	Fairfield.
Brown, Christopher N.....	Ironton.....	Lawrence.
Cherryholmes, William K.....	Millersburg.....	Holmes.
Comstock, Charles B.....	Columbus.....	Franklin.
Cowles, Alfred H.....	Cleveland.....	Cuyahoga.
Dahl, Harry B.....	Washington.....	Fayette.
Edwards, Frank.....	Bloomingsburg.....	Fayette.
Elliott, Leigh H.....	Bloomingsburg.....	Fayette.
Fassig, Oliver L.....	Columbus.....	Franklin.
Fay, F. Willis.....	Columbus.....	Franklin.
Fuller, Willard.....	Cleveland.....	Cuyahoga.
Garrett, William B.....	Elmford, West Virginia.....	
Goldfredrick, Adolph.....	Circleville.....	Pickaway.
Gregory, Hiram D.....	Portsmouth.....	Scioto.
Hochstetler, Charles E.....	Nebraska City, Nebraska.....	

## SECOND YEAR—PRELIMINARY COURSE—Continued.

NAME.	RESIDENCE.	COUNTY.
Hubbard, Herman M.....	Columbus .....	Franklin.
Hutchinson, Harry B.....	Columbus .....	Franklin.
Hyatt, Harry .....	Augusta .....	Carroll.
Keffer, Frederic.....	Cleveland .....	Cuyahoga.
Koehler, Nicholas .....	Hilliard .....	Franklin.
Langfitt, William C.....	Millersburg.....	Holmes.
Lewis, Harry J .....	West Lafayette .....	Coshocton.
Markley, Horatio .....	Nevada .....	Wyandot.
Martin, Harry .....	Mt. Vernon .....	Knox.
McCoy, Homer W.....	South Point .....	Lawrence.
McDowell, John A .....	Columbus .....	Franklin.
Merion, Charles, Jr.....	Columbus .....	Franklin.
Miller, William H.....	McArthur.....	Vinton.
Mills, Augustus C .....	West Alexandria .....	Preble.
Moore, Henry C.....	Columbus .....	Franklin.
Mosher, George C .....	Findlay .....	Hancock.
Reeve, J. Charles .....	Dayton .....	Montgomery.
Rodgers, William P .....	Ironton.....	Lawrence.
Safford, Vinton P .....	Chillicothe .....	Ross.
Spielman, John A.....	Tiffin.....	Seneca.
Waddell, Frederick J .....	Racine .....	Meigs.
Wikoff, John B .....	Columbus .....	Franklin.
Wilgus, Horace L.....	Conover .....	Miami.
Williams, George .....	Columbus .....	Franklin.
Williams, Harley .....	Columbus .....	Franklin.

## FIRST YEAR—PRELIMINARY COURSE.

Ackerman, Eli.....	Columbus .....	Franklin.
Ackerman, Fremont.....	Columbus .....	Franklin.
Ackerman, Monroe F.....	Columbus .....	Franklin.
Atwater, Arthur S .....	Cleveland .....	Cuyahoga.
Baker, Dney H.....	Columbus .....	Franklin.
Baker, William V.....	Columbus .....	Franklin.
Bancroft, Walter H .....	Columbus .....	Franklin.
Beckwith, Whitney C.....	Columbus .....	Franklin.
Bingham, Edward .....	Columbus .....	Franklin.
Bixler, John A.....	Brookville .....	Montgomery.
Bradford, Joseph N .....	Columbus .....	Franklin.
Brotherton, William .....	Cedarville .....	Greene.
Broucher, Marcus .....	Columbus .....	Franklin.
Colvin, Cuvier A.....	Columbus .....	Franklin.
Colvin, Darwin H.....	Columbus .....	Franklin.
Cornell, William B.....	Columbus .....	Franklin.
Crawford, Robert A.....	Columbus .....	Franklin.
Curtis, Helen G.....	Little Hocking.....	Washington.
Deterly, Frank C .....	Columbus .....	Franklin.
Dix, Mary A.....	Columbus .....	Franklin.
Doremus, Frank S .....	Columbus .....	Franklin.
Dove, Samuel L .....	Carroll .....	Fairfield.
Dun, George W.....	Dublin .....	Franklin.
Dun, John.....	Dublin .....	Franklin.
Fisher, Dudley T .....	Columbus .....	Franklin.
Fitch, Eliza D .....	Columbus .....	Franklin.
Freeman, Charles.....	Columbus .....	Franklin.
Fullington, Charles P.....	Irwin .....	Union.
Galbreath, John H.....	Columbus .....	Franklin.
Garrison, Richard F.....	Salem, N. J.....	
Garvin, Harry B.....	Columbus .....	Franklin.
Gemunder, Albert C .....	Columbus .....	Franklin.
Glenn, Josephine T .....	Columbus .....	Franklin.
Halm, William L .....	Columbus .....	Franklin.

## FIRST YEAR—PRELIMINARY COURSE—Continued.

NAME.	RESIDENCE.	COUNTY.
Hine, Addie .....	West Berlin .....	Erie.
Hinman, Charles D .....	Columbus .....	Franklin.
Holman, George .....	Columbus .....	Franklin.
Howald, Henry J .....	Columbus .....	Franklin.
Hoyt, John W .....	Monroeville .....	Huron.
Hubbard, Frank .....	Columbus .....	Franklin.
Huffman, Jacob A .....	Columbus .....	Franklin.
Hull, Harry C .....	Millersburg .....	Holmes..
Knopf, George .....	Columbus .....	Franklin.
Lamb, Elizabeth .....	Columbus .....	Franklin.
Linton, Robert .....	Columbus .....	Franklin.
Lovejoy, Jesse .....	Columbus .....	Franklin.
Mayers, Charles R .....	Millersburg .....	Holmes.
McDonald, Edgar M .....	Coshocton .....	Coshocton.
McGill, Charles .....	Columbus .....	Franklin.
Miner, Louis .....	Columbus .....	Franklin.
Miskimen, George W., Jr .....	Newcomerstown .....	Tuscarawas.
Monypeny, William, Jr .....	Columbus .....	Franklin.
Mullins, William James .....	Alleghany, Pa .....	
Orr, Charles .....	Columbus .....	Franklin.
Orton, Edward, Jr .....	Columbus .....	Franklin.
Parker, William .....	Columbus .....	Franklin.
Pleukharp, Charles .....	Columbus .....	Franklin.
Poland, August A., Jr .....	Columbus .....	Franklin.
Pool, Harwood R .....	New York .....	
Robinson, Parl C .....	Kenton .....	Hardin.
Royce, Walter .....	Richmond .....	Clermont.
Schwenker, John .....	Columbus .....	Franklin.
Shedd, Earl E, Jr .....	Columbus .....	Franklin.
Shedd, Frederick W .....	Columbus .....	Franklin.
Shepherd, Chester C .....	Columbus .....	Franklin.
Smith, Guy .....	Elyria .....	Lorain.
Spielman, David W .....	Tiffin .....	Seneca.
Thompson, John G., Jr .....	Columbus .....	Franklin.
Upson, Joseph F .....	Tallmadge .....	Summit.
Vanderburg, Charles R .....	Columbus .....	Franklin.
Vanharlingen, Edward M .....	Columbus .....	Franklin.
Wade, Julia F .....	Columbus .....	Franklin.
Whitehurst, George A .....	Canal Winchester .....	Franklin.
Wikoff, James E .....	Columbus .....	Franklin.
Wirth, Herman .....	Columbus .....	Franklin.
Wood, Joshua G .....	Columbus .....	Franklin.
Woodbury, William .....	Columbus .....	Franklin.

## UNCLASSIFIED STUDENTS.

Anderson, George Y .....	Columbus .....	Franklin.
Baily, George S .....	Waynesville .....	Warren.
Baker, Harry E .....	Columbus .....	Franklin.
Barcus, Harry .....	Columbus .....	Franklin.
Barcus, Flora .....	Columbus .....	Franklin.
Bryan, John .....	Sidney .....	Shelby.
Bryan, Ormand M .....	London .....	Madison.
Burns, William .....	Coshocton .....	Coshocton.
Butler, Albert C .....	Columbus .....	Franklin.
Coit, Belle .....	Columbus .....	Franklin.
Conly, Alice M .....	Shelby Iron Works, Ala .....	
Cornell, Lorenzo D .....	Shreve .....	Wayne.
Cunningham, Arthur J .....	Columbus .....	Franklin.
Davis, Lucy J .....	Dublin .....	Franklin.
Denel, George C .....	Urbana .....	Champaign.
Doney, S. Darlington .....	Columbus .....	Franklin.
Doty, Frank V .....	Middletown .....	Butler.

## UNCLASSIFIED STUDENTS—Continued.

NAME.	RESIDENCE.	COUNTY.
Ewing, Kittle .....	Columbus .....	Franklin.
Ferneau, Thomas B .....	Bainbridge .....	Rosa.
Field, Flora .....	Columbus .....	Franklin.
Galbraith, John W .....	Neville .....	Clermont.
Galloway, Harry N .....	Columbus .....	Franklin.
Gill, Allis B. ....	Columbus .....	Franklin.
Gill, Maggie H. ....	Hilliard .....	Franklin.
Glover, Sioux .....	Hilliard .....	Franklin.
Graham, Dora .....	Clarksburg .....	Rosa.
Graham, Rebecca .....	Clarksburg .....	Rosa.
Greene, Harry N .....	Atwater .....	Portage.
Gutner, Ada J .....	Westerville .....	Franklin.
Haines, Jettie .....	Oneida .....	Carroll.
Hall, Calvin C .....	Crestline .....	Crawford.
Hamilton, William D .....	Columbus .....	Franklin.
Harris, C. Atwell .....	Pickerington .....	Fairfield.
Harsh, Nannie .....	Oneida .....	Carroll.
Hay, John Houston .....	Coshocton .....	Coshocton.
Holmes, Joshua M .....	South Charleston .....	Clarke.
Hughes, Frank L .....	Columbus .....	Franklin.
Huston, Frank .....	South Solon .....	Fayette.
Innis, Adam G .....	Columbus .....	Franklin.
Innis, Louvina C .....	Columbus .....	Franklin.
Innis, Maxwell P .....	Columbus .....	Franklin.
Innis, Sarah G .....	Columbus .....	Franklin.
Jewett, George F .....	West Canaan .....	Madison.
Jones, Anna .....	Hilliard .....	Franklin.
Jones, Henry O .....	Columbus .....	Franklin.
Jones, J. Paul .....	Hilliard .....	Franklin.
Jones, Willie S .....	Shreve .....	Wayne.
Kellerman, Charles C .....	Cedar Hill .....	Fairfield.
Kellerman, Michael F .....	Cedar Hill .....	Fairfield.
Kinnaird, William J .....	Camp Chase .....	Franklin.
Lee, Edwin S .....	Coshocton .....	Coshocton.
Lee, George W .....	Crestline .....	Crawford.
Leonhard, Louis Charles .....	Dayton .....	Montgomery.
Lewis, Charles M .....	Circleville .....	Pickaway.
Linton, Elizabeth .....	Columbus .....	Franklin.
Longman, Lollie A .....	Columbus .....	Franklin.
Loving, Joseph S .....	Columbus .....	Franklin.
Martin, Gideon D .....	Carroll .....	Fairfield.
Mathew, Katherine A .....	Columbus .....	Franklin.
McDonald, John M .....	Columbus .....	Franklin.
McFarland, Fanny S .....	Columbus .....	Franklin.
McLanghin, James B .....	Bainbridge .....	Rosa.
Milligan, James P .....	Rushville .....	Fairfield.
Morgan, R. M .....	Mt. Vernon .....	Knox.
Mustaine, Jefferson K .....	West Liberty .....	Logan.
O'Brien, David .....	Worthington .....	Franklin.
Orton, Charles J .....	Columbus .....	Franklin.
Randabaugh, John .....	Celina .....	Mercer.
Rector, Allen T .....	Nebraska City, Nebraska .....	
Reilly, Jane O .....	Marysville .....	Union.
Robinson, Edward L .....	Columbus .....	Franklin.
Samuel, Minnie P .....	Columbus .....	Franklin.
Schoch, Laura A .....	Canal Winchester .....	Franklin.
Seeley, Edward .....	Austinsburg .....	Ashtabula.
Shallenberger, J. M .....	Amanda .....	Fairfield.
Shinn, Charles A .....	Selma .....	Clarke.
Smith, Florizell .....	Lithopolis .....	Fairfield.
Smith, Horace .....	Boswell .....	Mahoning.
Smith, Lot L., Jr .....	Columbus .....	Franklin.

## UNCLASSIFIED STUDENTS—Continued.

NAME.	RESIDENCE.	COUNTY.
Smith, William P.....	Hopetown .....	Ross.
Smythe, Perry P.....	Columbus .....	Franklin.
Stambaugh, George.....	Gahanna .....	Franklin.
Tallmadge, Darius.....	Columbus .....	Franklin.
Tarbox, Theodore H .....	Cedarville .....	Greene.
Townshend, Harriet .....	Columbus .....	Franklin.
Townshend, Alice.....	Columbus .....	Franklin.
Tryon, Arthur G.....	Willoughby .....	Lake.
Waddell, Harry D.....	Greenfield .....	Highland.
Wade, Susan .....	Columbus .....	Franklin.
Walton, Alice .....	Hilliard .....	Franklin.
Ward, John C.....	Willoughby .....	Lake.
Warner, Cora.....	Chillicothe .....	Ross.
Warner, Frank .....	Chillicothe .....	Ross.
Webb, Mary.....	Columbus .....	Franklin.
Wilson, Josiah D .....	Clarksbnrg, West Va.....	
Wilson, Stonewall J .....	Clarksburg, West Va.....	
Wilson, William M .....	Yellow Springs .....	Greene.
Winder, Sebastian C.....	Atwater .....	Portage.
Wood, Kenneth D .....	Columbus .....	Franklin.
Woods, Mary G.....	Columbus .....	Franklin.
Woodward, Charles A .....	Columbus .....	Franklin.
Wormley, Mary W.....	Columbus .....	Franklin.

## SPECIAL STUDENTS.

Anderson, Newton M .....	Columbus .....	Franklin.
Atkinson, John C.....	Vinton .....	Gallia.
Bennett, Charles M.....	Urbana .....	Champaign.
Dun, Charles B .....	London.....	Madison.
McCloud, Richard H.....	London .....	Madison.



## TREASURER'S REPORT.

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COLUMBUS, OHIO, November 15, 1877.

HON. WARREN P. NOBLE, *Chairman of the Board of Trustees of O. A. and M. College:*

SIR: I have the honor to submit the seventh annual report of the financial transactions of the College for the fiscal year ended to-day. The arrangement of the several statements contained in this report is the same that has been adopted in former years. The statements are as follows:

I. A general statement of cash accounts, showing the receipts, disbursements, and cash balance on hand this day.

II. A statement showing the condition of the several appropriations made by the Board of Trustees, the payments made from each during the year, and the balances now remaining subject to draft.

III. A statement showing the drafts made upon the Endowment Fund invested in the "*faith of the State*," and its present condition.

IV. A detailed statement of all the cash received from all sources during the year.

V. A detailed statement of all payments made.

I can only repeat the substance of the few observations I had to make in my last annual report, that the ordinary current expenses involved in the support and maintenance of the College, upon the present plan of management, will absorb the definite and reliable resources. A brief examination of the following statements will confirm this view.

### THE ENDOWMENT FUND.

I desire, right here, to make special reference to the care that has been taken of this fund by the several boards of trustees, of which you have been a member from the beginning.

The gift of the United States to the State of Ohio, was scrip for six hundred and twenty-nine thousand nine hundred and twenty (29,920) acres of land, the proceeds of the sale of which were to constitute a fund, the income from which should be used for the purpose of promoting the "liberal and practical education of the industrial classes in the several pursuits and professions of life."

The State officers, to whom the scrip was entrusted for sale, under various acts of the General Assembly, disposed of the same for the net sum of..	\$342,450 80
This amount was invested in the debt of the State, and, with the interest, accumulated, to January 1, 1871, to wit:.....	92,687 47
Constituted the sum originally credited upon the books of the State departments as the "Ohio Agricultural and Mechanical College Fund," amounting to .....	\$435,138 27
Since the organization of the College, when the income of this fund was made subject to its demand for the "support and maintenance" of the Institution, the fund has been carefully and scrupulously conserved, and not allowed to suffer diminution; the real estate, buildings, and equipment of the College have been provided for out of the donation fund of over \$325,000, secured for its location in Columbus, and thus the Endowment Fund was permitted to accumulate materially during the earlier years; and the net accumulations of interest, during the past seven years, amounts to .....	64,861 23
These accretions of interest, by a happy correspondence of the figures, leave a present endowment fund, arising from the United States grant, of exactly .....	\$500,000 00
To this is added the proceeds of Virginia military lands, sold by the Auditor of State in 1875, which were ascertained, by Hon. Ralph Leete, chairman of the committee on these lands, to belong to the College, and credited by authority of a joint resolution of the General Assembly, to the Endowment Fund, the sum of .....	1,592 56
The Franklin county bonds in the State Treasury, belonging to the College, amounting to .....	34,500 00
Added to the above make a total fund of .....	\$536,092 56

This amount is entirely inadequate to the prospective demands of the Institution, and it is to be hoped that it will never grow less.

While the utmost economy in all departments is imperative, we may reasonably hope that the State will, in some generous, paternal manner, make such provision for its foster child as shall promote its vigor and usefulness, and abundantly assure the general government that the gift of its endowment fund has been worthily bestowed.

I am, sir, very respectfully, yours,

HENRY S. BABBITT, *Treasurer.*

## STATEMENT I.

## A GENERAL STATEMENT OF CASH ACCOUNTS FOR THE FISCAL YEAR ENDING NOVEMBER 15, 1877.

HENRY S. BABBITT, *Treasurer, in account with the Ohio Agricultural and Mechanical College :*

Dr.

1876—Nov. 16.	For balance of cash on hand .....	\$2,021 53	
	To cash from various sources, briefly as follows:		
	From the Treasurer of State, on the		
	account of the income from the En-		
	dowment Fund, balance due on		
	1876 .....	\$2,203 73	
	On account of same for 1877 .....	28,700 00	
		<u>30,903 73</u>	
	From students' term bills—		
	Winter term, 1876-7 .....	\$648 33	
	Spring term, 1877 .....	693 80	
	Fall term, 1877 .....	1,240 00	
		<u>2,582 13</u>	
	From rent of houses—		
	President Orton .....	\$280 00	
	Prof. Mendenhall .....	330 00	
	Prof. Townshend, \$300, less repairs		
	allowed, \$120 .....	180 00	
		<u>790 00</u>	
	* From proceeds of notes received for		
	Virginia military land sales .....	\$605 45	
	For interest on same .....	147 04	
		<u>752 49</u>	
	From subscriptions to location of		
	College .....	\$1,340 65	
	Less costs paid to Clerk of Court on		
	this account .....	239 38	
		<u>1,101 27</u>	
	From sale of chemicals and other materials...	321 29	
		<u>36,450 91</u>	
	Total receipts during the year .....		36,450 91
	Total receipts, including balances .....		<u>38,472 44</u>

* The bills receivable, taken for sale of lands, remaining in my hands, in process of collection and in suit, amounted, Nov. 16, 1876, to .....	\$15,098 24
Notes received during the year amounted to .....	310 00
Total .....	<u>\$15,408 24</u>
Amount collected on principal of notes during year, as above ....	\$605 45
Add net loss on note of E. Tucker .....	23 01
	<u>628 46</u>
Leaving notes receivable, unpaid, to date, for .....	\$14,779 78

Under the head of Statement III. will be found a credit to the Endowment Fund of the proceeds of a sale of land by the Auditor of State, amounting to \$1,592.56.

CONTRA, CR.

1877—Nov. 15. By disbursements as follows (see Statement V. for details):

For support and maintenance of College, viz.—

For salaries .....	\$26,485 25	
For improvements and improving grounds .....	402 68	
For farm account.....	1,251 67	
For repairs.....	337 32	
For expenses of Trustees .....	472 15	
For other current expenses.....	4,027 27	
	<hr/>	\$32,976 34
For furniture and apparatus .....	1,462 59	
For library.....	156 44	
For expenses Virginia military land surveys ..	1,520 00	
For purchase of lathe.....	35 00	
For entertainment of legislative committees..	71 40	

Total disbursements for the year .....	\$36,221 77
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Leaving a balance of cash on hand, in Franklin Na- tional Bank .....	\$2,250 67
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STATEMENT II.—APPROPRIATIONS.

A STATEMENT SHOWING THE BALANCES OF THE SEVERAL APPROPRIATIONS AT THE BEGINNING OF THE FISCAL YEAR (NOVEMBER 16, 1876), THE AMOUNTS APPROPRIATED, AND THE SUMS EXPENDED FROM EACH APPROPRIATION DURING THE YEAR, AND THE BALANCES SUBJECT TO DRAFT AT THE END OF THE YEAR, NOVEMBER 15, 1877.

For what purpose appropriated.	Balances unexpended Nov. 15, 1876.	Appropriations made during fiscal year 1877.	Amount subject to draft in 1877.	Amounts expended in 1877.	Appropriations transferred (dropped).	Balances subject to draft Nov. 15, 1877.
Support and maintenance of College .....	<sup>a</sup> \$12,093 45	<sup>b</sup> \$33,500 00	\$45,593 45	<sup>d</sup> \$32,976 34	.....	\$12,617 11
Furniture and apparatus .....	2,795 96	.....	2,795 96	1,462 59	.....	1,333 37
Library .....	511 45	500 00	1,011 45	156 44	.....	855 01
Expenses of Virginia military lands survey, etc. ....	.....	<sup>c</sup> 1,520 00	1,520 00	1,520 00	.....	.....
Purchase of lathe and tools .....	35 00	.....	35 00	35 00	.....	.....
Entertainment of Legislative Committees .....	.....	100 00	100 00	71 40	.....	.....
Main College building and grounds .....	6,813 89	.....	6,813 89	.....	\$6,813 89	28 60
Boarding hall .....	486 97	.....	486 97	.....	486 97	.....
Mess hall, or club-house .....	508 18	.....	508 18	.....	508 18	.....
Expenses of Committee to Washington .....	500 00	.....	500 00	.....	500 00	.....
Purchase of cars and horses for street railroad .....	3,000 00	.....	3,000 00	.....	3,000 00	.....
Totals .....	\$26,744 90	\$35,620 00	\$62,364 90	\$36,221 77	\$11,309 04	\$14,834 09

<sup>a</sup> Includes three items from balances of last year, to wit: \$11,759.29 for current expenses, \$116.87 for farm improvement, and \$217.29 for repairs.

<sup>b</sup> Consists of appropriations made January 6, for \$10,500, March 6, \$10,000, and June 20, \$13,000.

<sup>c</sup> Included in order of the Board passed June 22, 1876, and amount appropriated January 6, 1877 (\$400), to pay claim of Sam. Kendrick.

<sup>d</sup> This sum includes expenditures for salaries, \$26,485.25; for improvements and improving grounds, \$402.68; for farm account, \$1,251.67; for repairs, \$337.32; for expenses of Trustees, \$472.15; and for other current expenses, \$4,027.27.

STATEMENT III.

SHOWING THE AMOUNT OF THE OHIO AGRICULTURAL AND MECHANICAL COLLEGE ENDOWMENT FUND, COMPUTED IN ACCORDANCE WITH PROVISIONS OF THE ACT PASSED FEBRUARY 10, 1870. (O. L., vol. 67, page 15.)

Amount of fund as principal, January 1, 1877.....	\$499,234 94
Add six months' interest on same to July 1, 1877, at 6 per cent.   \$14,977 05	
Add interest on \$34,500 of Franklin County Agricultural Bonds, due March 15, 1877.....	1,207 50
Add interest on last amount to July 1, 1877.....	21 13
Total additions first half year.....	16,205 68
Making .....	\$515,440 62
From which sum is to be deducted payments made by the State from the income of the fund since last report, as follows:	
Dec. 1, 1876—\$1,000, and interest to July 1, 1877, 7 mos.....	\$35 00
19, 1876— 1,000,                   "                   "                   6 mos. 12 dys	32 00
22, 1876— 2,000,                   "                   "                   6 mos. 9 dys	63 00
Jan. 5, 1877— 1,000,                   "                   "                   5 mos. 26 dys	29 33
22, 1877— 2,500,                   "                   "                   5 mos. 9 dys	66 25
Feb. 24, 1877— 2,500,                   "                   "                   4 mos. 7 dys	52 92
Mar. 18, 1877— 4,000,                   "                   "                   3 mos. 13 dys	68 67
Apr. 29, 1877— 2,500,                   "                   "                   2 mos. 2 dys	25 83
May 7, 1877— 2,000,                   "                   "                   1 mo. 24 dys	18 00
May 30, 1877— 1,703.73,                   "                   "                   1 mo. 1 day	8 78
June 9, 1877— 3,200,                   "                   "                   22 dys	11 75
<u>\$23,403.73</u>	<u>\$411 53</u>
Total deductions first half year .....	23,815 26
Leaving amount of new principal July 1, 1877.....	\$491,625 36
Add interest on this sum to January 1, 1878 .....	\$14,748 76
Add interest on Franklin county bonds as above, coupons fall- ing due September 15, 1877 .....	1,228 63
Total additions second half year .....	15,977 39
Making .....	\$507,602 75
From which is to be deducted the following payments:	
Sept. 14, 1877—\$1,500, and interest to Jan, 1, 1878, 3 mos. 17 days	\$26 75
23, 1877— 3,000,                   "                   "                   3 mos. 8 days	49 00
Nov. 7, 1877— 3,000,                   "                   "                   1 mo. 24 days	27 00
<u>\$7,500</u>	<u>\$102 75.</u>
Total deductions second half year.....	7,602 75
Leaving amount of fund derived from proceeds of sale of land-scrip and accumulations thereto, till January 1, 1878.....	\$500,000 00

In addition to the above, there is a further credit of the proceeds of a sale, by the Auditor of State, of certain Virginia military lands belonging to the College, as ascertained under provisions of a joint resolution of the General Assembly adopted April 24, 1877 (O. L., vol. 74, page 539), amounting, on the first of January next, to ..... 1,592 56

**Total** ..... **\$501,592 56**

Upon this sum interest at the rate of six per cent. per annum, compounded semi-annually, is payable, under the laws of Ohio, to the treasurer of the College. Besides this, a deposit was made in the State Treasury by the Trustees of the College, in compliance with the provisions of an act passed January 20, 1871, of the seven per cent. bonds of Franklin county, amounting to the sum of..... **\$34,500 00**

Making an aggregate fund, held by the State in trust for the College, of ..... **\$536,092 56**

Interest upon the above sums, computed upon the same terms, for 1878, will amount to..... 32,552 81

Warrants upon the State Treasury were issued during the fiscal year 1877 (as above shown) in sums amounting to ..... 30,903 73

This sum includes a portion of the interest accrued and subject to draft in 1876, and drawn (this year) by authority of a clause in section four of the general appropriation act passed May 5, 1877 (O. L., vol. 74, page 197), amounting to ..... 7,203 73

Making the amount received by the Treasurer upon the appropriation for the College, of \$32,411.75, for interest on the irreducible debt of the State in 1877 (see page 16 of the Auditor of State's report for 1876), the sum of..... 23,700 00

And leaving, still subject to draft, if it should be needed by the College, and if drawn prior to January 1, 1878, the further sum of..... 8,711 45

**\$32,411 45**

The act of February 10, 1870, requires the calculations of interest to be made by semi-annual rests, on the first of January and July of each year, but the fiscal year of the State and of the College ends on the 15th of November, and the accounts are all settled at that date. It is held by the Attorney General that the balances of appropriations undrawn on the first of January and July annually, revert to the parent fund, as part of the principal, which cannot be diminished except by special legislation, similar to that had at the last session of the General Assembly, referred to above.

STATEMENT IV.

A STATEMENT IN DETAIL OF CASH RECEIVED FROM ALL SOURCES, DURING THE FISCAL YEAR ENDING NOVEMBER 15, 1877, BY HENRY S. BABBITT, TREASURER.

Date.	From whom received, and on what account.	Amount.
1876.		
Nov. 16	Balance of cash on hand (in Franklin National Bank).....	\$2,021 53
18	Elijah Carter, note, \$13.89; interest, \$2.50.....	16 39
18	Geo. Nace, note, \$26.67; interest, \$4.75.....	31 42
18	Prater Anstin, note, \$16.66; interest, \$2.99.....	19 65
24	President Orton, house rent.....	35 00
27	Wylie Austin, note, \$46.67; interest, \$8.93.....	55 60
Dec. 1	Treasurer of State, income of Endowment Fund.....	1,000 00
1	Wm. Holton, note, \$57 56; interest, \$3.46.....	61 02
19	Treasurer of State, income of Endowment Fund.....	1,000 00
22	same " ".....	2,000 00
23	Professor Mendenhall, house rent, 6 months.....	150 00
23	Geo. Nace, note, \$26.66; interest, \$6.82.....	33 48
29	President Orton, house rent.....	35 00
1877.		
Jan. 5	Treasurer of State, income of endowment fund.....	1,000 00
5	J. Daugherty, interest on note.....	5 00
5	N. H. Burley, note, \$35.21; interest, \$1.79.....	37 00
22	Treasurer of State, income of Endowment Fund.....	2,500 00
29	J. Daugherty, interest.....	5 00
29	President Orton, house rent.....	35 00
29	Prof. Mendenhall, ".....	30 00
29	Students, on winter term bills.....	600 00
Feb. 24	Treasurer of State, income of Endowment Fund.....	2,500 00
24	W. Liston, note, \$26.04; interest, \$11.31.....	37 35
24	J. Herdman, note, \$35.58; interest, \$4.27.....	39 85
26	President Orton, house rent.....	35 00
Mar. 18	Treasurer of State, income of Endowment Fund.....	4,000 00
18	Professor Mendenhall, house rent.....	30 00
31	Students, balance of winter term bills, \$128.33, less deposit fees returned, \$80.....	48 33
Apr. 4	Professor Mendenhall, house rent.....	30 00
21	Students, spring term bills, \$549, less deposit fees retained, \$110....	439 00
29	President Orton, house rent.....	35 00
29	Treasurer of State, income on Endowment Fund.....	2,500 00
May 3	E. Tucker, note for \$192.56, and interest amounting to \$28.11— \$220 67, less allowed for error in measurement of land, \$50.62, and cost of collection, 50 cents—\$51.12.....	169 55
3	Professor Mendenhall, house rent.....	30 00
7	Treasurer of State, income of Endowment Fund.....	2,000 00
24	President Orton, house rent.....	35 00
24	J. W. Graham, note, \$40; interest, \$8.15.....	48 15
25	same note, \$40; interest, \$7.20.....	47 90
30	Students, balance of spring term bills.....	254 80
30	Treasurer of State, income of Endowment Fund.....	1,703 73
June 1	same " ".....	3,200 00
21	Francis Whitten, interest on notes.....	3 75
21	Wallis and Donaldson, note, \$39.96; interest, \$3.49.....	43 45
21	Professor Mendenhall, house rent.....	60 00
22	Jno. Little, Attorney General, settlement of claim against B. S. & W. C. Brown on subscription for location of College.....	640 00
July 5	Professor Norton, sale of chemical supplies.....	72 92
5	Professor Townshend, house rent for one year, \$300, less allowed for repairs made, \$120.....	180 00
12	Francis Whitten, interest on notes.....	3 75
Aug. 27	Dr. G. A. Doren Supt. Idiot Asylum, chimney castings.....	248 37
Sept. 14	Treasurer of State, income of Endowment Fund.....	1,500 00
23	same " ".....	3,000 00



STATEMENT IV—Continued.

Date.	From whom received, and on what account.	Amount.
1877.		
Oct. 18	Jno. Little, Attorney General, collected of G. S. Deming, for sub- scription to location of college, \$500.65, less sundry costs paid J. S. Abbott, Clerk of Franklin county, \$239.38 .....	261 27
	President Orton, house rent.....	70 00
	Chas. A. Barton, on account of interest on notes.....	60 00
	Students, fall term bills .....	1,240 00
30	Francis Whitten, on note .....	30 00
Nov. 6	Treasurer of State, income of Endowment Fund.....	3,000 00
12	Francis Whitten, balance of note, \$1.00; interest to July 13, 1877, \$3.18 .....	4 18
	Total receipts, including balance, November 15, 1876 .....	\$38,472 44
	Total disbursements for same period .....	36,221 77
	Leaving balance of cash on hand, in depository designated by the Board, Franklin National Bank .....	\$2,250 67

STATEMENT V.

A DETAILED ACCOUNT OF PAYMENTS MADE BY HENRY S. BABBITT, TREASURER, DURING THE FISCAL YEAR ENDING NOVEMBER 15, 1877.

Date.	No.	To whom paid, and for what purpose.	From what appropriation.	Amount.
1876.				
Nov.	16	Steinbarger & Hensel, one barrel alcohol.....	Current expenses .....	\$102 25
	17	Prof. Mendenhall, supplies for laboratory .....	" .....	41 50
	20	" Mathew, supplies for department.....	" .....	15 56
	21	Blesch & Klie, repairing steam-pipes.....	Repairs .....	23 65
	22	Prof. Lnigi Lomis.....	Salaries .....	50 00
	23	C. H. Bingham, automatic gate .....	Improving grounds .....	50 00
	24	President Orton, salary one school month .....	Salaries .....	350 00
	24	Prof. Mendenhall, " .....	" .....	250 00
	24	" Townshend, " .....	" .....	250 00
	24	" McFarland, " .....	" .....	250 00
	24	" Millikin, " .....	" .....	250 00
	24	" Tuttle, " .....	" .....	250 00
	24	" Norton, " .....	" .....	250 00
	24	" Colvin, " .....	" .....	250 00
	24	" Smith, " .....	" .....	150 00
	24	" Mathew, " .....	" .....	75 00
	24	" Williams, " .....	" .....	45 00
	25	S. S. Martin, janitor.....	" .....	58 33
	25	same students' labor .....	Current expenses .....	15 00
	25	H. B. Carrington, " Battles of Revolution " .....	Library .....	7 50
	29	C. S. & C. R. R. Co., freight on ordnance .....	Current expenses .....	8 66
	29	C. C. & I. R. R. Co., " .....	" .....	6 06
	30	Ed. Hyatt, repairing models .....	" .....	5 50
	4	P. C. & St. L. R'y Co., freight on ordnance .....	" .....	17 55
	5	G. H. Twiss, signal bell.....	" .....	17 75
	7	Jos. Snllivant, Secretary .....	Salaries .....	166 66
	12	Columbus Paving Co., paving entrances .....	Improving grounds .....	111 47
	16	J. S. Humphrey, map of farm.....	Current expenses .....	3 00
	19	T. H. Schneider, trimmings for military department.....	" .....	26 00
	19	Adams, Weadon & Co., lumber and shutters.....	" .....	22 99
	21	Aston & Huff, stove for club-house.....	" .....	13 75
Dec.				

DETAILED ACCOUNT OF PAYMENTS MADE, ETC.—Continued.

Date.	No. of order.	To whom paid, and for what purpose.	From what appropriation.	Amount.
1876.				
Dec.	22	President Orton, salary one month.....	Salaries .....	\$350 00
	22	Prof. Mendenhall, " ".....	" .....	250 00
	22	" Townshend, " ".....	" .....	250 00
	22	" McFarland, " ".....	" .....	250 00
	22	" Millikin, " ".....	" .....	250 00
	22	" Tuttle, " ".....	" .....	250 00
	22	" Norton, " ".....	" .....	250 00
	22	" Colvin, " ".....	" .....	250 00
	22	" Smith, " ".....	" .....	150 00
	22	" Mathew, " ".....	" .....	75 00
	22	" Lomis, " ".....	" .....	50 00
	22	" William, " ".....	" .....	45 00
	22	S. S. Martin, janitor.....	" .....	58 33
	22	same sundries .....	Current expenses .....	52 88
	22	Baldwin Quarry Co., stone curbing .....	Improving grounds .....	83 22
	23	Field & Fletcher, well and pipes .....	Repairs .....	101 75
	23	Prof. Mendenhall, lathe .....	Furniture and apparatus .....	36 67
	29	Kaiser & Bro., repairing furnace.....	Repairs .....	25 00
	30	A. B. Townshend, labels for guns .....	Current expenses .....	1 50
1877.				
Jan.	1	Jos. Sullivan, Secretary.....	Salaries .....	166 66
	2	T. B. Potts & Son, repairing stoves .....	Repairs .....	7 50
	2	M. C. Lilly & Co., guidons for cadets.....	Current expenses .....	5 50
	9	Sam. Kendrick, settlement of claim .....	Virginia military lands .....	400 00
	9	Ralph Leete, expenses relative to Virginia military lands.....	" .....	500 00
	10	Kilbourne, Jones & Co., hardware .....	Current expenses .....	78 81
	13	Prof. Millikin, salary one month .....	Salaries .....	250 00
	13	Kilbourne, Jones & Co., balance of account .....	Current expenses .....	17 05
	20	Geo. Stacey & Co., two gas retorts .....	Repairs .....	110 00
	20	Wm. D. Henkle, advertising in Educational Monthly .....	Current expenses .....	45 00
	20	Ohio Furniture Co., table, chairs, etc.....	Furniture and apparatus .....	165 00
	23	Wassall Fire-Clay Co., fire-clay .....	Repairs .....	14 70
	23	Columbus Paper Co., drawing-paper .....	Current expenses .....	5 00



DETAILED ACCOUNT OF PAYMENTS MADE, ETC.—Continued.

Date.	To whom paid, and for what purpose.	From what appropriation.	Amount.
1877.			
March 14	Reuben Martin, making gas .....	Current expenses .....	\$22 50
21	Door, Sash and Lumber Co., lumber for cases .....	" .....	4 40
25	Prof. Mathew, materials for department .....	" .....	13 48
28	President Orton, salary for March .....	Salaries .....	350 00
28	Prof. Mendenhall, " .....	" .....	250 00
28	" Townshend, " .....	" .....	250 00
28	" McFarland, " .....	" .....	250 00
28	" Millikin, " .....	" .....	250 00
28	" Tuttle, " .....	" .....	250 00
28	" Norton, " .....	" .....	250 00
28	" Smith, " .....	" .....	150 00
28	" Mathew, " .....	" .....	75 00
28	" Lomia, " .....	" .....	50 00
28	" Williams, " .....	" .....	45 00
29	Joseph Sullivan, Secretary .....	" .....	166 66
29	same expenses .....	Current expenses .....	18 50
29	Prof. Norton, supplies for laboratory .....	" .....	45 50
29	" Colvin, salary for March .....	Salaries .....	250 00
31	Mrs. S. S. Martin, collection of tools .....	Current expenses .....	50 00
31	President Orton, expenses .....	" .....	51 69
31	Mrs. S. S. Martin, balance due S. S. Martin .....	Salaries .....	27 16
3	M. A. Suydam & Co., 101 tons coal .....	Current expenses .....	225 71
3	E. E. Corwin, students' labor .....	" .....	18 55
7	Michael Dillon, janitor .....	Salaries .....	34 56
9	Chas. Huston, supplies for laboratory .....	Current expenses .....	4 00
10	F. M. Sebring, trees and shrubs ....	" .....	15 25
13	M. C. Lilley & Co., material for military department .....	" .....	27 50
14	Adams & Orr, lumber .....	" .....	8 00
16	W. D. Cumming, Johnson's encyclopædia .....	Library .....	9 57
21	J. S. Humphrey, students' labor .....	Current expenses .....	7 62
27	President Orton, salary for April .....	Salaries .....	350 00
27	Prof. Mendenhall, " .....	" .....	250 00
27	" Townshend, " .....	" .....	250 00
April			

27	756	"	McFarland,	"	"	"	"	"	"	250 00
27	757	"	Millikin,	"	"	"	"	"	"	250 00
27	758	"	Tuttle,	"	"	"	"	"	"	250 00
27	759	"	Norton,	"	"	"	"	"	"	250 00
27	760	"	Colvin,	"	"	"	"	"	"	250 00
27	761	"	Smith,	"	"	"	"	"	"	150 00
27	762	"	Mathew,	"	"	"	"	"	"	75 00
27	763	"	Lomia,	"	"	"	"	"	"	50 00
27	764	"	Williams,	"	"	"	"	"	"	45 00
1	765	"	Townshend, paid for labor	"	"	"	"	"	Improving grounds	51 00
2	766	Jacob Deerth, cistern at farm house	"	"	"	"	"	"	Repairs	12 00
3	767	M. C. Lilley & Co., altering guidons	"	"	"	"	"	"	Current expenses	2 00
3	768	Geo. F. Wheeler, brooms	"	"	"	"	"	"	"	3 50
5	769	Thomas Mathew, material for department	"	"	"	"	"	"	"	12 25
5	770	E. E. Corwin, work on cistern	"	"	"	"	"	"	Repairs	5 70
5	771	same making gas	"	"	"	"	"	"	Current expenses	10 50
7	772	F. W. Christeen, books	"	"	"	"	"	"	Library	19 02
8	773	Blesch & Klie, repairing pipes	"	"	"	"	"	"	Current expenses	28 44
8	774	M. Dillon, janitor for April	"	"	"	"	"	"	Salaries	58 33
8	775	Adams Express Co., charges on ammunition	"	"	"	"	"	"	Current expenses	10 90
10	776	Joseph Sullivant, secretary	"	"	"	"	"	"	Salaries	166 66
12	777	R. G. Hanford & Son, trees, etc	"	"	"	"	"	"	Improving grounds	30 00
16	778	Kaiser & Bro., tin conductor	"	"	"	"	"	"	Current expenses	4 80
17	779	G. W. Gleason, military books	"	"	"	"	"	"	"	24 66
17	780	same books	"	"	"	"	"	"	Library	107 13
19	781	Ball Bros., material for physical laboratory	"	"	"	"	"	"	Current expenses	5 90
22	782	Geo. H. Twiss, material for physical laboratory	"	"	"	"	"	"	"	10 40
25	783	Joseph Sullivant, Secretary	"	"	"	"	"	"	Salaries	166 66
25	784	President Orton, salary for May	"	"	"	"	"	"	"	350 00
25	785	Prof. Mendenhall,	"	"	"	"	"	"	"	250 00
25	786	" Townshend,	"	"	"	"	"	"	"	250 00
25	787	" McFarland,	"	"	"	"	"	"	"	250 00
25	788	" Millikin,	"	"	"	"	"	"	"	250 00
25	789	" Tuttle,	"	"	"	"	"	"	"	250 00
25	790	" Norton,	"	"	"	"	"	"	"	250 00
25	791	" Colvin,	"	"	"	"	"	"	"	250 00
25	792	" Smith,	"	"	"	"	"	"	"	150 00
25	793	" Mathew,	"	"	"	"	"	"	"	75 00
25	794	" Lomia,	"	"	"	"	"	"	"	50 00
25	795	" Williams,	"	"	"	"	"	"	"	45 00
26	796	" Smith, labels for books	"	"	"	"	"	"	Library	3 65
26	797	" McFarland, sundries	"	"	"	"	"	"	Current expenses	90

May

DETAILED ACCOUNT OF PAYMENT MADE, ETC.—Continued.

Date.	No. of order.	To whom paid, and for what purpose.	From what appropriation.	Amount.
1-77.				
May 30	793	P. Hayden & Son, repairing boilers .....	Current expenses .....	\$6 38
June 4	799	M. A. Suydam & Co., coal .....	" .....	40 17
5	800	Adams & Orr, lumber .....	Improvements .....	10 75
5	801	M. Dillon, janitor .....	Salary .....	50 00
5	802	J. B. Ihrig, tin-work, farm-house .....	Repairs .....	23 46
7	803	Columbus Transfe. Co., hauling weights, etc .....	Current expenses .....	2 50
15	804	Jno. H. Williams, students' labor .....	" .....	14 85
16	805	Prof. Norton, supplies for laboratory .....	" .....	30 78
16	806	same salary for June .....	Salaries .....	250 00
18	807	President Orton, salary for June .....	" .....	350 00
18	808	Prof. Mendenhall, " .....	" .....	250 00
18	809	" Townshend, " .....	Salaries .....	250 00
18	810	" McFarland, " .....	" .....	250 00
18	811	" Millikin, " .....	" .....	250 00
18	812	" Tuttle, " .....	" .....	250 00
18	813	" Colvin, " .....	" .....	250 00
18	814	" Smith, " .....	" .....	250 00
18	815	" Mathew, " .....	" .....	150 00
18	816	" Leitch, " .....	" .....	75 00
18	817	" Williams, " .....	" .....	50 00
18	818	" Mendenhall, supplies for laboratory .....	" .....	15 00
19	819	Lewis Emmeson, repairing gate .....	Current expenses .....	7 55
19	820	Lucas O'Brien, services of band .....	" .....	15 00
22	821	E. A. Kirk, labor at College .....	" .....	30 00
22	822	Orebaugh & Brodbeck, advertising .....	" .....	3 75
22	823	Prof. Mathew, supplies for department .....	" .....	3 00
22	824	Pres. Orton, students' labor, etc .....	" .....	16 09
23	825	William Eccles, helping janitor .....	" .....	97 77
26	826	J. F. Linton, advertising .....	" .....	4 00
7	827	M. Dillon, janitor .....	" .....	5 80
7	828	Joseph Sullivan, Secretary .....	Salaries .....	50 00
7	829	Kilbourne, Jones & Co., hardware .....	" .....	152 76
7	830	J. B. Scheimder, trustee .....	Current expenses .....	22 41
			" .....	21 35

July	9	831	Myers & Brickell, advertising .....	Current expenses .....	6 87
	9	832	W. D. Cumming, Johnson's Encyclopædia .....	Library .....	9 57
	12	833	Comly & Francisco, advertising .....	Current expenses .....	6 25
	13	834	John Seltzer, supplies for laboratory .....	" .....	6 00
	13	835	G. W. Gleason, sundries .....	" .....	36 22
	16	836	E. E. Corwin, making gas .....	" .....	7 50
	17	837	Columbus Sewer-Pipe Co., moving telegraph poles from High street .....	" .....	12 97
	23	838	Aston & Huff, repairing stoves .....	" .....	3 50
	25	839	Putnam & Fur y, advertising .....	" .....	3 75
	26	840	M. C. Lilley & Co., materials for military department .....	" .....	22 00
August	27	841	Prof. Townshend, 20 head of cattle .....	Farm expenses .....	706 00
	29	842	E. E. Corwin, making gas .....	Current expenses .....	4 50
	27	843	F. W. Merrick, notary fees .....	" .....	5 45
	27	844	Joseph Sullivan, Secretary .....	Salaries .....	125 00
	3	845	A. C. Denel, trustee .....	Expenses .....	43 50
	5	846	M. Dillon, janitor .....	Salaries .....	37 50
	9	847	M. C. Lilley & Co., stationery .....	Current expenses .....	9 26
	13	848	Jacob Deerth, repairing gas cistern .....	" .....	10 00
	15	849	Tice & Lynch, brokerage on importations .....	Furniture and apparatus .....	31 01
	15	850	Columbus Transfer Company, freight .....	" .....	2 86
	15	851	Jacob Deerth, repairing gas-well .....	Current expenses .....	12 00
	15	852	D. M. Brelsford, Steward, brooms .....	" .....	3 00
	20	853	Jacob Deerth, repairing well .....	" .....	5 00
	24	854	Charles Klie, repairing steam-pipe .....	" .....	22 65
	25	855	H. T. Stewart, cleaning at College .....	" .....	9 00
	27	856	Henry A. Ward, models for Zoological department .....	Furniture and apparatus .....	1,133 73
	27	857	H. Hoover, trustee .....	Current expenses .....	13 75
	27	858	A. C. Denel, " .....	" .....	6 55
	29	859	W. Worden, hack hire for trustees .....	" .....	3 00
	30	860	Prof. Townshend, balance of farm account .....	Farm improvements .....	545 67
Sept.	1	861	Taylor & O'Harra, carriage hire .....	Current expenses .....	5 00
	2	862	James E. Jenkins, cleaning College .....	" .....	4 00
	2	863	M. Dillon, janitor .....	Salaries .....	37 50
	5	864	H. T. Stewart, cleaning College .....	Current expenses .....	5 50
	6	865	George F. Wheeler, soap for College .....	" .....	2 70
	7	866	Joseph Sullivant, Secretary .....	Salaries .....	125 00
	8	867	H. Shanklin, cleaning College .....	Current expenses .....	3 37
	8	868	Stitt, Price & Co., lime for gas-works .....	" .....	3 60
	8	869	Jed. Keeley, repairing plastering .....	" .....	20 37
	11	870	M. A. Suydam & Co., coal .....	" .....	531 60
	11	871	E. N. Freshman & Brothers, advertising .....	" .....	200 00
	11	872	Prof. Tuttle, on account of salary .....	Salaries .....	100 00



DETAILED ACCOUNT OF PAYMENTS MADE, ETC.—Continued.

Date.	No. of Order	To whom paid, and for what purpose.	From what appropriation.	Amount.
1877.				
Sept. 12	873	Thomas Kelley, student, work at College.....	Current expense.....	\$12 50
12	874	Flo. Smith, ".....	".....	5 00
12	875	Jed. Keeley, plastering.....	".....	5 25
13	876	Alonzo Day, cleaning College.....	".....	8 42
14	877	E. E. Corwin, gas-making.....	".....	6 00
15	878	Aaron Waters, cleaning College.....	".....	10 81
15	879	Washington Townshend, cleaning College.....	".....	9 81
15	880	Orebaugh & Brodbeck, advertising.....	".....	2 25
15	881	Nevins & Myers, printing.....	".....	15 70
15	882	A. C. McFarland, painting 46 radiators.....	".....	46 00
15	883	E. R. Kirk, cases for zoological models.....	Furniture and apparatus.....	52 00
20	884	Columbus Transfer Company, freight's.....	Current expenses.....	5 47
22	885	Prof. Mathew, sundries for department.....	".....	30 00
26	886	Joseph Sullivan, Secretary.....	Salaries.....	125 00
28	887	Pres. Orton, salary for September.....	".....	315 00
28	888	Prof. Mendenhall, salary for September.....	".....	225 00
28	889	" Townshend, ".....	".....	225 00
28	890	" McFarland, ".....	".....	225 00
28	891	" Millikin, ".....	".....	225 00
28	892	" Tuttle, ".....	".....	225 00
28	893	" Norton, ".....	".....	125 00
28	894	" Smith, ".....	".....	225 00
28	895	" Mathew, ".....	".....	150 00
28	896	" Williams, ".....	".....	85 00
28	897	" Lomis, ".....	".....	45 00
28	898	M. Dillon, janitor.....	".....	50 00
28	899	A. C. Nickens, saw-dust.....	Current expenses.....	37 50
29	900	E. R. Kirk, wood-work at College.....	".....	2 50
29	901	E. E. Corwin, gas-making.....	".....	40 95
				3 12

Oct.	2	902	J. E. McKinnon, pipe-fitting.....	Current expenses .....	20 00
	2	903	Adams & Orr, lumber.....	" .....	39 46
	6	904	Myers & Brickell, advertising .....	" .....	9 75
	6	904½	M. A. Suydam & Co., 215½ tons of coal.....	" .....	505 81
	8	905	Conuly & Francisco, advertising .....	" .....	6 50
	13	906	T. H. Schneider, materials for military department .....	" .....	24 00
	15	907	Charles A. Barton, services.....	Virginia Military lands .....	120 00
	17	908	Thomas Kelley, carriage hire.....	Current expenses .....	3 00
	20	909	Howard Jackson, white-washing.....	" .....	4 00
	20	910	C. W. Ross, materials for laboratory .....	" .....	15 00
	24	911	Charles Klie, pipe-fittings .....	" .....	3 75
	25	912	Joseph Sullivan, Secretary, salary for October .....	Salaries .....	125 00
	27	913	Pres. Orton, salary for October.....	" .....	315 00
	27	914	Prof. Mendenhall, salary for October .....	" .....	225 00
	27	915	" Townshend, " .....	" .....	225 00
	27	916	" McFarland, " .....	" .....	225 00
	27	917	" Millikin, " .....	" .....	225 00
	27	918	" Tuttle, " .....	" .....	225 00
	27	919	" Norton, " .....	" .....	225 00
	27	920	" Smith, " .....	" .....	150 00
	27	921	" Mathew, " .....	" .....	85 00
	27	922	" Lomia, " .....	" .....	50 00
	27	923	" Williams, " .....	" .....	45 00
	27	924	J. G. McKinnon, pipe-fitting .....	Current expenses .....	32 00
	27	925	E. R. Kirt, food-work.....	" .....	60 05
	27	926	M. Dillon, janitor .....	Salaries .....	37 50
	27	927	same sundries.....	Current expenses .....	29 73
	27	928	Charles Huston, sundries.....	" .....	24 80
	27	929	George H. Twiss, supplies for laboratory.....	" .....	20 85
	27	930	J. G. McKinnon, pipe-fitting .....	" .....	16 00
	27	931	John Little, Attorney General, costs paid collecting subscription to loca- tion of College, \$239.38. (See Receipts.) .....	.....	.....
	27	932	Prof. Mendenhall, supplies for laboratory .....	Current expenses .....	35 53
	27	933	Forest City Chemical Company, paints.....	" .....	6 00
	27	934	Isaac B. Potts, pipe-fitting, etc .....	" .....	97 01
	27	935	D. K. Hunter, taps and dies for laboratory .....	" .....	8 00

Date.	No. of order.	To whom paid, and for what purpose.	From what appropriation.	Amount.
1877. Nov. 15	936	Henry S. Babbitt, Treasurer, salary to date, 22½ months.....	Salaries .....	\$750 00
15		same cash expenses.....	Current expenses .....	16 05
15		same cash paid trustees' expenses.....	" .....	384 00
		Total disbursements, 1877.....	.....	<u>\$36,221 77</u>

Total receipts as shown by Statement I .....\$38,472 44  
Total disbursements as above ..... 36,221 77  
Balance of cash in Franklin National Bank..... \$2,250 67

HENRY S. BABBITT, Treasurer.

# REPORT OF FARM SUPERINTENDENT.

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*To the Trustees of the Ohio Agricultural and Mechanical College:*

ENTLEMEN: The following account of stock, implements, farming operations and improvements, receipts and disbursements, for the year ending April 1, 1877, is respectfully submitted:

## INVENTORY OF STOCK.

5 draft horses .....	\$400 00
10 steers, three years old.....	400 00
2 steers, two years old.....	70 00
1 steer, one year old.....	20 00
4 cows.....	250 00
1 heifer, two years old.....	35 00
2 heifers, one year old.....	40 00
5 calves .....	25 00
4 breeding sows.....	80 00
7 barrow hogs.....	105 00
20 pigs .....	100 00
1 boar .....	25 00
	<hr/>
	\$1,550 00

## IMPLEMENTS AND TOOLS.

1 Champion Reaper and Mower.....	\$150 00
1 Buckeye Reaper and Mower.....	150 00
1 grain drill .....	50 00
1 horse rake.....	25 00
4 plows.....	60 00
2 harrows.....	35 00
1 corn-planter for one horse.....	20 00
3 cultivators .....	40 00
1 two horse cultivator.....	25 00
3 wagons .....	200 00
1 spring wagon .....	50 00
1 sled .....	20 00
1 fanning-mill .....	20 00
5 sets harness.....	80 00
1 horse fork.....	5 00
1 cradle scythe.....	2 50
3 scythes .....	4 50
7 hay-forks .....	7 00

6 A & M C

4 manure-forks.....	\$4 00
8 shovels .....	10 00
8 spades .....	10 00
3 picks .....	4 50
2 mattocks.....	3 00
2 crowbars.....	5 00
2 hammers.....	3 00
1 grindstone .....	3 00
1 crosscut-saw .....	5 00
1 corn sheller .....	6 00
6 hoes .....	4 00
2 log chains.....	6 00
12 corn-cutters.....	6 00
4 measures and baskets.....	3 00
2 hay-knives .....	3 00
1 shovel-plow .....	5 00
3 tools for draining.....	6 00
1 cider mill .....	25 00
3 tools for digging post holes.....	3 00
7 cattle-chains .....	1 75
3 scrapers .....	25 00
2 ladders .....	5 00
1 beetle and wedges.....	5 00
	<hr/>
	\$1,095 25

## FARM CROPS.

During the past year forty-four acres of corn, twenty-five acres of wheat, and sixteen acres of oats were grown on the College. The cost of the corn crop was as follows :

Plowing, thirty-six days, at \$3 per day.....	\$108 00
Harrowing, seven days, at \$3 per day.....	21 00
Planting and seed.....	25 00
Cultivating, forty-nine days, horse and man.....	98 00
Hoeing weedy places, forty-two days.....	63 00
Cutting .....	55 00
Husking 2,754 bushels, at five cents per bushel.....	137 70
	<hr/>
Total cost.....	\$508 20
Value of crop, 2,754 bushels, at thirty-five cents per bushel.....	963 90
	<hr/>
Value above cost.....	\$455 70

No manure was used upon any part of this corn ground ; a large part of it had been very wet, and was put in cultivation with a view to the improvement of the land as much as to the value of the crop.

The wheat crop was grown upon twenty-five acres of worn land, and much of it excessively weedy. The expense and result of the crop is as follows :

Plowing, twenty-four days, at \$3 per day.....	\$72 00
Harrowing and rolling, seven days.....	21 00
Drilling, three days .....	9 00
Seed—twenty bushels .....	30 00
Harvesting.....	75 00
Threshing .....	36 00
Total cost.....	<u>\$243 00</u>
Value of crop, 534 bushels, at \$1 per bushel.....	534 00
Value above cost.....	<u>\$291 00</u>

After cutting, this crop was exposed to a severe rain storm, which involved some loss of grain as well as additional expense in harvesting. An average of over twenty-one bushels to the acre, although not a good crop, will be regarded as good for the region.

Had the land been summer-plowed and made entirely clean, the crop would, doubtless, have been much better; but the wheat crop was secondary to seeding the land with timothy and clover.

The oat crop was grown in a field of sixteen acres. The variety sown is known as Surprise Oats. The account is as follows:

Plowing, thirteen days .....	\$39 00
Harrowing and rolling, four days.....	12 00
Drilling, two days.....	6 00
Seed—twenty-four bushels, at forty cents per bushel.....	9 60
Harvesting .....	27 00
Threshing, 652 bushels .....	29 56
Total cost.....	<u>\$123 16</u>
Value of 652 bushels, at thirty-five cents per bushel.....	228 20
Value above cost.....	<u>\$105 04</u>

Sixty acres of grass were cut; the crop was only medium, owing to the dry weather of the early summer. The month of July proved rainy, and consequently some of the grass was allowed to stand longer than it should have done, and a part of what was cut early was more or less damaged by rains, much of which, owing to the low price and light demand through the past winter, is still unsold.

#### IMPROVEMENTS.

The improvements made upon the farm during the past year are the further drainage of the swamp in the south-west part of the farm, at an expense for tile and freight, of \$155 70; of laying them at a depth of from two and a half to six feet, of \$193.00, or a total of \$348.70. Nearly three hundred rods of drains were made, and with the best results. Some of the best corn grown on the farm was on the land made tillable by these

drains. The levels for the drains were taken by students of the engineering class.

The run that passes through the farm, when it had almost reached the Whetstone, suddenly turned from a direct course, and, after a long detour, entered the river some distance higher up the stream. This involved the flooding of both meadow and corn-land, which appeared to be avoidable by cutting through a narrow neck of land, to allow the run to enter the river by a much shorter course, and lower down the stream; The work was finished at a cost of \$133.00. The result of the improvement is what had been anticipated. The fences upon the College Farm, at the time of its purchase, were very poor. From year to year these have been replaced by new ones. The past year, some 200 rods of board fence have been built, at an expense of \$250.00.

#### RECEIPTS FROM PRODUCE SOLD.

April—Hay .....	\$56 85
May—Hay, \$4.60; milk, \$6.32.....	10 92
June—Milk and pasture.....	13 50
July—Hay .....	36 50
August—Pasture .....	40 00
September—Wheat, 520.55 bushels, at 95 cents per bushel.....	503 20
“ Milk and pasture.....	10 50
October—Hay .....	49 60
November—Wheat, \$109.42, and pasture.....	118 52
December—Fat hogs .....	265 65
“ Hay.....	77 70
January—Hay, \$22.95; two hogs, \$32.72 .....	55 67
February—Ten steers, weight, 15,490 pounds, at 5½ cents per pound.	813 22
“ Fat hog.....	27 20
March—Hay and corn .....	85 50
Balance from last year.....	72 28
	<hr/>
	\$2,236 79

#### CROPS UNSOLD.

Corn, 1,500 bushels, at 40 cents per bushel .....	\$600 00
Oats, 400 bushels, at 35 cents per bushel.....	140 00
Hogs, 7 head, at \$17 per head .....	119 00
Hay, 25 tons, at \$7 per ton.....	175 00
	<hr/>
	\$1,034 00
	<hr/>
Total value of crops.....	\$3,070 79

#### DISBURSEMENTS.

Voucher No. 1. T. Grim, fencing and carpenter work .....	\$150 24
“ 2. Students' labor .....	4 25
“ 3. Students' labor .....	81 74
“ 4. Students' labor .....	106 55

<b>Voucher No. 5.</b>	<b>Students' labor .....</b>	<b>46 57</b>
" 6.	Wright, horse hire.....	6 50
" 7.	H. M. Grim, repairing scales.....	2 00
" 8.	Jackson and Conway, mower repairs .....	4 25
" 9.	J. M. Fuson, hay rope.....	6 60
" 10.	Students' labor .....	5 75
" 11.	Huffman and Company, pump and repairs .....	13 50
" 12.	A. Carlisle, pine fencing.....	19 20
" 13.	M. L. Shover, labor .....	5 00
" 14.	Vause and Duval, seed oats .....	21 91
" 15.	Prof. McFarland's order, weeding paths, etc.....	15 82
" 16.	J. Sherman, pump .....	6 00
" 17.	R. Price, labor under Prof. McFarland's direction.....	32 25
" 18.	J. M. Fuson, scraper .....	14 00
" 19.	Jackson and Conway, mcwer repairs .....	1 75
" 20.	Harker and Shrig, tin spouting.....	24 08
" 21.	A. Carlisle, lumber for fencing .....	91 75
" 22.	J. M. Fuson, corn plow, etc.....	11 50
" 23.	D. C. Mooney, draining tiles .....	146 71
" 24.	Freight on tiles.....	9 09
" 25.	M. D. Lakin, for threshing .....	43 59
" 26.	Wm. Yapp, for labor.....	256 50
" 27.	F. Moehrman, for labor.....	324 62
" 28.	F. Hood, for labor .....	68 00
" 29.	M. Thomas, for labor.....	199 25
" 30.	E. E. Corwin (student), harvesting .....	00 00
" 31.	C. Dietrich (student), harvesting .....	51 75
" 32.	J. Conrad, team work on run.....	39 00
" 33.	H. C. Moore, husking .....	8 30
" 34.	James Dix, one year's wages .....	420 00
" 35.	W. Ely, barrel of salt .....	1 75
" 36.	L. J. Lynn, husking .....	12 70
" 37.	J. Immel, labor.....	3 10
" 38.	J. Sherman, husking.....	19 85
" 39.	A. Coleman, husking.....	3 20
" 40.	H. Taylor, husking .....	3 75
" 41.	McCune and Mithoff, hardware.....	79 90
" 42.	Wm. Burdell, Jr., harness and repairs .....	52 80
" 43.	Mr. Prouty, plow, etc.....	13 75
" 44.	Mr. Shewry, blacksmithing.....	65 20
" 45.	A. B. Townshend, harvesting.....	35 00
" 46.	R. Price, labor.....	268 50
" 47.	Geo. Dix, labor.....	431 94
		<u><u>\$3,282 49</u></u>

The sums paid, as above, can scarcely be distributed with absolute accuracy between the different interests connected with the College. The sum of \$459.69 has been paid during the year to students, for such labor



on the farm and on the College grounds, as leisure from their studies would permit. The amount of \$1,596.80 is chargeable to ordinary farming operations, and \$1,183 to work designed to improve the condition of the farm. An expense of \$444 is chargeable for labors dependent on the connection of the farm with the College.

N. S. TOWNSEND.

## ABSTRACT OF PROCEEDINGS

### OF THE BOARD OF TRUSTEES OF OHIO AGRICULTURAL AND MECHANICAL COLLEGE.

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COLUMBUS, OHIO, *January 3, 1877.*

In accordance with the by-laws and regular notice, the Board of Trustees of the Ohio Agricultural and Mechanical College convened for their annual meeting this day at 3 o'clock P.M., all the members present, to wit: Leete, Larwill, Noble, Waddle, and Sullivant. An hour or two was passed in considering business that was to come before the Board, and then they adjourned to meet at 10 A.M. at the College.

JANUARY 4, 1877.

Board met in College building, at 10 o'clock A.M., all the members present, and spent until 1 o'clock in visiting the different departments and inspecting the rooms generally, and then adjourned to 2 P.M.

#### AFTERNOON SESSION.

Board met at 2 o'clock P.M., was called to order, the minutes of previous meetings read and approved, when, upon motion, Mr. Sam. Kendrick made a statement, and presented various papers in relation to a certain claim of his against the Board for services on his part, under a contract made on behalf of the Board by Messrs. Leete and Noble, the Committee on Virginia Military Lands.

A couple of hours were spent in considering the various matters presented by Kendrick, and the Board adjourned to meet in the city at ten A.M. to-morrow.

JANUARY 5, 1877.

Board met at 10 o'clock A.M., all members present, and spent the day in reading and discussing the various matters contained in the annual reports of Secretary, Treasurer, President, and Professors, and especially the report on Virginia Military Lands, by Mr. Leete, who also submitted various letters, reports, statements, and documents in relation thereto. Mr.

Leete also presented questions concerning Virginia Military Lands. The Board declined to make any further advances or incur any further expenses in their reclamation, and expressed a strong desire that this whole matter should be brought to a speedy conclusion, and the final report thereon be submitted to the Board. They also reiterated the decision, heretofore expressed, that it in no manner approved of, or intended, on behalf of the College, to take advantage of the technical defects in titles, owing to omissions, neglect, or ignorance of those in possession, where there is an equitable title, nor intend to place obstacles in the way of completing such titles. And especially is there no intention to make pursuit after *surplus* in any survey, unless there was clear evidence of fraud, and even then not without careful consideration. The Board only proposes to assert its claim to unsurveyed and vacant lands that clearly belong to the College, under the act donating these lands. It is well known to members of this Board that there is scarcely a survey in the Virginia Military District that does not contain more or less surplus than appears on the face of these entries and surveys; and to set up claims for the College for this surplus, would be to disturb titles throughout the whole district, and this the Board entirely disclaims, and will not countenance. It is not the policy of this Board to litigate and disturb titles, even in fraudulent entries and surveys, after those lands have passed into the hands of innocent purchasers, but where there are fraudulent entries and surveys, and surplus remaining in possession of those who committed these frauds, it is the manifest duty of this Board to assert the rights of the College. In doing less than all this, the Board would be neglectful of its trusts.

On motion of Mr. Sullivan, the following was adopted:

*Resolved*, That the claim and papers of Mrs. Sam. Kendrick be referred to Messrs. Waddle and Noble to examine and report the proper action for the Board thereon.

Mr. Leete presented a communication from Mr. George Engelke, inclosing an account of George W. Gleason for \$136.96, for curtains and fixtures, asking that said amount be paid by the Board, said curtains and fixtures having been bought by Mr. Engelke for the College boarding-house, of which he was lessee. This account was some months ago before the Board, was fully discussed and rejected, and the Board considers it impolitic and improper to open up and entertain claims (standing on their original basis) after they have been deliberately examined and passed upon; and, therefore, on motion of Mr. Waddle,

*Resolved*, That the Board hereby again rejects the claims presented by Mr. George Engelke.

Board now adjourned until to-morrow at 10 o'clock.

JANUARY 6, 1887.

Board met at 10 o'clock A.M.—all members present—was called to order, and proceeded to business.

On motion, duly put and carried, it was

*Ordered*, That Lieut. Lomia be requested to give the students such instruction in elocution as the Faculty find advisable, in time and quantity.

The committee to which was referred the claim and papers of Sam. Kendrick have examined the accounts, and, although they think his charges are high, recommend the adoption of the following, by way of compromise:

*Ordered*, That the Secretary issue an order on the Treasurer for four hundred dollars (\$400), in favor of Mr. Kendrick, in full of his account, to be paid out of proceeds of sales of college land in the Virginia Military District, upon his furnishing the Secretary of the Board a plat, with copies of the entries and notes, properly indicating the locality of the following lands, to wit: The island in Deer Creek, Ross county, claimed by Brown; also, a small gore in the same county; a tract in Morgan township, Scioto county; the Edwards tract in Brown county. Being the same lands verbally reported by said Kendricks to the Board, on January 4.

(Signed)

A. WADDLE,  
W. P. NOBLE.

On motion of Mr. Larwill,

*Ordered*, That the above report be accepted, and adopted by this Board.

*Ordered*, That the sworn statement of H. W. Overman, as to services rendered to J. M. Trimble, a former agent of this Board, be accepted, and his account of sixty-four dollars (\$64) be allowed, to be paid out of moneys arising from the sale of Virginia Military Lands.

President Orton appeared before the Board, preferring several requests in regard to the College and Faculty.

On motion of Mr. Noble, it was

*Ordered*, That Edward Orton, T. C. Mendenhall, A. H. Tuttle, and Sidney A. Norton, members of the Faculty, be granted the occupancy of the College buildings, with the use of the apparatus belonging to the College, for the purpose of establishing and conducting a school of science, during the summer vacation.

And in view of the supposed advantages, in the way of advertising for the College, it is further

*Ordered*, That gas and water be furnished, for the accommodation of such school, free of expense or charge to the Faculty; and the above persons have permission to occupy the boarding-house, making such agreement with Mr. Turner, the lessee, as may be agreed upon between him and said parties.

Board now adjourned to 2 P.M.

#### AFTERNOON SESSION.

Board met at 2 o'clock P.M.—all members present—and proceeded to the annual election of its officers. Whereupon, it appeared that Mr. Ralph

Leete had three votes, and Mr. Noble one vote ; and Mr. Leete was declared to be elected to the Presidency of the Board for the ensuing year. Also, J. Sullivant received four votes, and was thus elected Secretary for the ensuing year. And Henry S. Babbitt, having received five votes, was declared duly elected as Treasurer for the ensuing year.

*Ordered*, That the Secretary be required to make a board-walk from the boarding house to the College, if the same be found compatible with our financial ability.

Messrs. Waddle, Larwill, and Sullivant were appointed Executive Committee by the President of the Board.

On motion of Mr. Noble, it was

*Resolved*, That five hundred dollars (\$500) be and is hereby appropriated, to be expended in the further purchase of such books of reference, and other books, as appear to be most needed, to aid in the means of instruction in the College, to be equally divided among the several departments, or as nearly so as the Executive Committee, on due consideration, deem advisable.

On motion of Mr. Waddle, duly put and carried, it was

*Ordered*, That the sum of ten thousand five hundred dollars (\$10,500) be and is hereby appropriated, from the income fund of the College, in the State Treasury, as follows: Eight thousand and thirty five dollars (\$8,035) for salaries, and two thousand four hundred and sixty-five dollars (\$2,465) for the payment of outstanding claims against the College, and for all other incidental and current expenses incurred in the support and maintenance of the College and the several departments.

The Board now, at 5 P.M., adjourned to meet at 10 A.M., Tuesday, January 9.

TUESDAY, January 9, 1877.

Board met according to adjournment—present, Messrs. Leete, Larwill, Waddle and Sullivant. A quorum being present, the Board was called to order.

A communication was received from Nelson Morris, relative to renting the College farm. After some discussion, it was agreed to leave this whole matter to the Executive Committee, who are to meet in March.

The communication of Messrs. A. O. & Frank N. Beebe, requesting the Trustees of the Ohio Agricultural and Mechanical College to take action, and eject from the tract of land in Scioto county, purchased by them of the agent of the College, was read by the Secretary, and the request therein contained was debated, and, upon consideration, the following resolution was adopted:

*Resolved*, That in all cases where sales of lands in the Virginia Military District have been, or may hereafter be made, no agent of the Trustees shall take action or institute any suit to eject any settler or squatter from such land who was in occupancy of the same at the time of such sale, the Trustees only agreeing to convey title, and making no covenant or agreement to give possession, the right to bring ejectments being vested in the purchasers.

On motion, duly put and carried, it was

*Ordered*, That the Secretary of the Board is directed to invite the committees of the House and Senate, on Education, Colleges, and Universities, Common Schools, Agriculture, the committees on Establishing and Endowing a Chair of Mining and Metallurgy in the Ohio Agricultural and Mechanical College, and such other members of the present Legislature as may find it convenient, to visit the Ohio Agricultural and Mechanical College, at some early day, to be agreed upon, and said Secretary is to provide conveyance for said committees, and the sum of one hundred dollars is hereby appropriated to defray such necessary expenses as may be incurred under this resolution.

COLUMBUS, OHIO, *March 5, 1877.*

The Board of Trustees of the Ohio Agricultural and Mechanical College met this day at 4 o'clock, P.M., pursuant to a call of the President—present, Messrs. Noble, Leete, and Sullivant, and adjourned to 7.30 o'clock P.M.

EVENING SESSION.

Board met at 7 30 o'clock P.M.—present, Messrs. Leete, Noble, Waddle, and Sullivant; and a quorum being present, was called to order and proceeded to business.

Several communications were presented, which were considered and discussed—one from Professor Lomia, presenting matters relating to the Military Department; one from Mr. Vance, and one from Mr. Baker, concerning the College farm, and its superintendence and management, and others from Mr. Leete, concerning the College lands in Virginia Military District, and adjourned until to-morrow.

MARCH 6, 1877.

Board met at 8.30 o'clock, A.M., and proceeded to attend the funeral of a son of Professor Colvin, who met with a sudden death by an accident, and from thence proceeded to the College.

Board re-assembled at 10 o'clock A.M.—present, Messrs. Leete, Noble, Larwill, Sullivant, and Waddle—were called to order and proceeded to business. Received a deputation of students from Horton Literary Society, who desired an assignment of rooms for their society; also had an interview and received an application from Mr. Thorne, who desired the appointment of farm foreman. They also received a communication from Charles Babbitt, who presented a claim for *five hundred and thirty dollars* (\$530) for services as janitor and engineer at the College. After due consideration this claim was unanimously rejected, and, on motion, duly put and carried, it was

*Ordered*, That the claim of Charles Babbitt be and hereby is disallowed and rejected.

After an examination of the rooms, it was

*Ordered*, That the Horton Literary Society be allowed to occupy room No. 49 upon the same terms and conditions by which the Dashler Society occupy theirs, and that it be

left to the discretion of the President of the Faculty and the Secretary of this Board, to likewise grant the occupancy of room No. 50.

The Board visited various parts of the farm, and discussed various matters connected therewith; and, on motion of Mr. Waddle, duly put and carried, it was .

*Ordered*, That the management of the farm has been very unsatisfactory to this Board, and requires a radical change; and the Professor of Agriculture, who is ex-officio Farm Superintendent, is earnestly requested to give his careful, prompt, and vigorous attention.

On motion of Mr. Leete, duly put and carried, it was

*Ordered*, That the Superintendents of the College Farm and grounds are hereby authorized to employ students desiring to labor, and that said Superintendents are instructed to give preference to such students as are endeavoring to maintain themselves in the College by their own exertions, and that they be allowed a compensation not exceeding *twelve cents an hour* for their labor, and that no student be permitted to labor more than four hours a day during term time, except on Saturdays.

Mr. Leete again presented, for the consideration of the Board, questions growing out of the management of the Virginia Military Lands, which were discussed, and at 4 o'clock P.M. the Board adjourned to meet in the city at 7.30 o'clock P.M.

#### . EVENING SESSION.

Board met at 7.30 o'clock P.M.—was called to order, and received and discussed a verbal report from Professor Townshend, who has the management of the College Farm; after which, on motion of Mr. Sullivant, duly put and carried, it was

*Ordered*, That Professor Townshend be allowed to make certain repairs to his house, according to his discretion, in amount not exceeding *one hundred and twenty dollars (\$120)*, this sum to be deducted from and credited on his house rent.

A communication from Mr. Aaron F. Perry was presented to the Board concerning a claim of his for legal services, of which, after consideration, it was, on motion of Mr. Waddle,

*Ordered*, That the sum of *three hundred dollars (\$300)* be paid to Mr. Perry, out of the proceeds of sales of Virginia Military Lands, and that said sum be charged to account of said land fund.

On motion of Mr. Waddle, duly put and carried, it was

*Ordered*, That the Secretary and the Farm Superintendent (the Prof. of Agriculture) be instructed to rent lands to such students as may desire a small amount of land for cultivation, at such reasonable rent as may be agreed upon by the parties.

And now the Board adjourned until 9 A. M. to-morrow.

COLUMBUS, *March 7, 1877.*

Board met at 9 o'clock A. M., was called to order, and proceeded to business, when on motion of Mr. Waddle, it was

*Ordered*, That Charles E. Thorne be appointed foreman on the farm, he to receive a compensation of *four hundred and twenty dollars* (\$420) per annum, the use of the farmhouse and the summer pasturage, and hay in winter for a cow, *his term of service to commence April 1st, 1877*, he to manage and work the farm to the best advantage, and control the hands thereon, receiving his instructions and advice from the Professor of Agriculture.

On motion, duly put and carried, it was

*Ordered*, That the sum of *ten thousand dollars* (\$10,000) be and is hereby appropriated from the endowment fund of the Ohio Agricultural and Mechanical College, for the support and maintenance thereof, in the payment of salaries and current expenses, and the Secretary is directed to draw orders from the same as it is needed. And it is further

*Ordered*, That the sum of *one hundred and twenty dollars* (\$120) be and is hereby appropriated for the purchase of trees, shrubbery, and plants for the College grounds, under the direction of the Secretary.

On motion of Mr. Waddle, it was

*Ordered*, That the unexpended balance of the several appropriations made prior to the January meeting of 1877, be charged back to the College treasury, except that for the library.

On motion of Mr. Leete, it was

*Ordered*, That the Secretary of this Board bring together, and cause to be bound in book form, fifteen or twenty copies of the annual reports of the Trustees, for reference, and that he deposit one copy in the College library, one in the State Library, and deliver a copy to each member of the Board of Trustees; and that the residue of such copies be preserved by the Secretary for the use of our successors.

On motion of Mr. Leete, it was

*Ordered*, That the College Librarian make a complete catalogue of the books and charts in the library, and that he procure cards with the words "*College Library*," to be pasted on the inside covers of the books, and numbered in consecutive order.

On motion of Mr. Sullivant, the following was passed:

WHEREAS, The General Assembly of the State of Ohio having refused the application of the Board of Trustees to furnish *arms, equipments, etc.*, for the use of the students in the Ohio Agricultural and Mechanical College, to aid them in the prosecution of the study of military tactics, as required by the fourth section of the act of Congress approved July 2d, 1862, and the Secretary of War having furnished such arms upon the application of this Board, therefore

*Ordered*, That this Board adopts and approves the action of Joseph Sullivant in the premises, and his co-obligors upon the indemnifying bond executed to the United States, for the care and re-delivery of said arms and accouterments, as contained in said bond.



Mr. Leete presented a paper for the signature and approval of the Board, requesting the city council to pass an ordinance levying a monthly tax, in proportion to the number of feet front, to clean, sweep, and sprinkle North High street from the tunnel to North Columbus. This the Board refused to do, as they could not do so without incurring a considerable pecuniary liability, and which the state of their treasury would not permit.

And now appeared Mr. Campen, for the proprietors of the North High Street Improvement and Railroad, and represented that the assent of the Trustees was wanted to secure the necessary number of feet front, before the city council could pass the proper ordinance, and only for this purpose was the Board asked to sign the petition. Whereupon, the Board not wishing the College to stand in the way of improvements, consents that the President of this Board may sign the assent of the Trustees to the petition to the city council for said ordinance, provided it does not and will not render said Trustees and the College liable for any tax or assessment, but not otherwise, it not being their intention by this act of the President to sanction or incur any pecuniary liability.

On motion, duly put and carried, it is

*Ordered*, That the Secretary give James Dix one month's notice that after that time his services will not be needed; and at that time he is required to surrender peaceable possession of the house and premises he now occupies.

And now, at 12 o'clock M., the Board adjourned *sine die*.

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## ORGANIZATION OF NEW BOARD OF TRUSTEES.

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COLUMBUS, OHIO, *June* 19, 1877.

The new Board of Trustees of the Ohio Agricultural and Mechanical College, appointed under the act of April 2, 1877, met pursuant to a call from the Governor, at 11 o'clock A.M., in the College building. Upon calling the roll, the following were found to be present, to wit:

3d District .....	Cyrus Falconer.
6th    " .....	W H. Scott.
7th    " .....	Herman Hoover.
8th    " .....	A. G. Deuel.
9th    " .....	T. C. Jones.
10th   " .....	Warren P. Noble.
11th   " .....	Ralph Leete.

12th District.....	Joseph Sullivant.
14th    ".....	Thomas Mickey.
15th    ".....	A. W. Glazier.
16th    ".....	J. C. Jamison.
19th    ".....	E. F. Linsign.
20th    ".....	W. S. Streator.

Total, 13.

The members from the following Districts were absent: 1st, 2d, 4th, 5th, 13th, 17th, and 18th. Total, 7.

A quorum being present, the Board proceeded to organize temporarily.

Upon motion of Mr. Leete, Judge T. C. Jones was appointed temporary Chairman, and J. Sullivant, Secretary.

After some conversation, the board adjourned until 1:30 P.M., to await the arrival of other members.

#### AFTERNOON SESSION.

Board met at 1:30 o'clock P.M., and was called to order, when Mr. Christian Kinsinger appeared from the 2d District, and Dr. J. P. Schmieder from the 5th District.

The time having arrived for commencing the closing exercises of the College, the Board adjourned until 6 o'clock P.M.

#### EVENING SESSION.

Board met at 6 o'clock P.M., and was called to order by the Chairman.

The members elect were now sworn into office by Mr. Frank Merrick, a Notary Public, and, on motion put and carried, it was decided to go into a determination as to the term of office of the Trustees, according to lot, as follows: The names of all were put into a hat and drawn in succession, under the supervision of tellers, the first seven names drawn to hold their office for six years, the second seven names drawn to hold for four years, and the remaining six names for the term of two years; whereupon, the following result was announced:

For six years—

1st District .....	David Sinton.
2d    ".....	Charles Kinsinger.
3d    ".....	Cyrus Falconer.
7th    ".....	Herman Hoover.
9th    ".....	T. C. Jones.
12th   ".....	Joseph Sullivant.
14th   ".....	Thomas Mickey.

## For four years—

8th District	.....	A. C. Deuel.
13th    "	.....	D. W. Caldwell.
17th    "	.....	A. B. Cornell.
19th    "	.....	E. F. Ensign.
11th    "	.....	Ralph Leete.
16th    "	.....	J. C. Jamison.
18th    "	.....	C. W. Horr.

## For two years—

4th District	.....	R. P. Finley.
6th       "	.....	W. H. Scott.
15th      "	.....	A. W. Glazier.
5th       "	.....	J. P. Schmieder.
10th      "	.....	Warren P. Noble.
20th      "	.....	W. S. Streator.

On motion duly put and carried, it was

*Ordered*, That we now proceed to effect a permanent organization, by the election by ballot of our permanent officers.

Tellers having been appointed, there appeared as the result of the first ballot that 5 votes were cast for Warren P. Noble, 2 for Mr. Streator, 4 for T. C. Jones, 1 for Ralph Leete, 1 for Cyrus Falconer, 1 for J. Sullivan.

*Second Ballot*.—Noble, 6 votes ; Streator, 1 vote ; Jones, 6 votes ; Sullivan, 1 vote.

*Third Ballot*.—Noble, 6 votes ; Streator, 1 vote ; Jones, 6 votes ; Sullivan, 1 vote.

*Fourth Ballot*.—Noble, 6 votes ; Jones, 7 votes ; Sullivan, 1 vote.

*Fifth Ballot*.—Same as the last.

*Sixth Ballot*.—Jones, 6 votes ; Noble, 7 votes ; Sullivan, 1 vote.

*Seventh Ballot*.—Same as the last.

*Eighth Ballot*.—Jones, 5 votes ; Noble, 8 votes ; Sullivan, 1 vote.

Mr. Warren P. Noble, of Tiffin, in the 10th District, having now received a majority of all the votes cast, was declared to be duly elected as President of this Board until its next annual election.

Mr. Noble made a brief acknowledgment, after which, on motion, it was suggested to go into an election of Secretary ; but a motion to adjourn having precedence, Mr. Sullivan asked the indulgence of the Board to make a personal statement concerning the Secretaryship before adjournment.

Permission being given, Mr. Sullivan made his statement ; whereupon, the Board adjourned to meet in the city, at one of the Governor's rooms, at 8:30 A.M., June 20th.

JUNE 20, 1877.

Board met at 8:30 o'clock, and was called to order by the President, the following members being present :

2d District	.....	Kinsinger.
3d	“ .....	Falconer.
5th	“ .....	Schmieder.
6th	“ .....	Scott.
7th	“ .....	Hoover.
8th	“ .....	Deuel.
9th	“ .....	Jones.
10th	“ .....	Noble.
11th	“ .....	Leete.
12th	“ .....	Sullivant.
13th	“ .....	Caldwell.
14th	“ .....	Mickey.
15th	“ .....	Glazier.
16th	“ .....	Jamison.
17th	“ .....	Cornell.
18th	“ .....	Horr.
19th	“ .....	Ensign.
20th	“ .....	Streator.

The minutes were read and approved, and the Board proceeded to business.

On motion of Mr. Jamison,

*Resolved*, That the Executive Committee of this Board shall consist of five members, who shall be elected by ballot.

An election of the Executive Committee having now been ordered, and tellers appointed, the election resulted as follows :

Jones	.....	11 votes.
Hoover	.....	12 “
Finley	.....	6 “
Deuel	.....	12 “
Leete	.....	2 “
Noble	.....	3 “
Streator	.....	2 “
Sullivant	.....	9 “
Kinsinger	.....	3 “
Falconer	.....	2 “
Caldwell	.....	3 “
Mickey	.....	3 “
Jamison	.....	1 “

Messrs. Jones, Hoover, Deuel, and Sullivant, having received a majority

of all the votes cast, were declared by the President of the Board to be duly elected as Executive Committeemen, to hold until the next annual election.

Another ballot was now cast for the remaining member, which resulted as follows :

Noble.....	3 votes.
Streator .....	8 “
Caldwell.....	3 “

Mr. Streator having received the requisite number of votes, was declared, in like manner as the others, to be elected as the remaining member of the Executive Committee.

Mr. Finley, of the 4th District, now joined the meeting.

A discussion now arose as to the salaries of the Faculty, during which, President Orton desiring to bring certain matters to the attention of the Board, the discussion was suspended, and the statements of Mr. Orton listened to, and some matters therein partially discussed; after which, the subject of the salaries was resumed.

A proposition to scale all the salaries of the Faculty was discussed, and it was agreed to confine it to those receiving \$2,500, and upward, and T. C. Jones offered the following :

*Resolved*, That the compensation of the President, and other members of the Faculty now receiving \$2,500, or more, shall be ten per cent. less than present rates, until the attendance of students shall average two hundred and fifty per annum.

This resolution being seconded, and the ayes and noes demanded, was duly put, and voted on with the following result :

In the affirmative—Messrs. Scott, Jones, Glazier, Jamison, Ensign, and Streator—6.

In the negative—Messrs. Kinsinger, Falconer, Finley, Schmieder, Hoover, Deuel, Noble, Leete, Sullivant, and Mickey—10.

So the resolution was lost.

The same resolution was now amended, by striking out “two hundred and fifty per annum,” and inserting “two hundred,” and again offered, and, being duly voted on, was decided in the affirmative.

The subject of the Secretary’s salary was now taken up, and, after some discussion, an informal ballot, to gather the sense of the Board, was taken. A formal ballot was then demanded.

Mr. T. C. Jones moved that the Secretary’s salary be fixed at \$1,500 per annum.

Mr. Kinsinger moved to amend by making it \$1,800.

Mr. Deuel moved to amend the amendment, by inserting “\$500,” instead of Mr. Kinsinger’s sum.

Mr. Jamison moved to amend Mr. Deuel’s sum, by making it \$300.

This being declared out of order, he then offered, as a substitute for all, a resolution to fix the salary at \$300.

After discussion, the President decided that the largest sum should first be voted on; and now Mr. Kinsinger's amendment was voted on, and lost.

The question now turned on the original resolution of Mr. Jones, which was voted on, and carried in the affirmative. And so the Board decided that the salary of the Secretary should be \$1,500 per annum.

The Board now took up the question of military drill and discipline, submitted by the President; and, after discussion, Mr. Jones offered the following:

*Resolved*, That the military drill and discipline be made imperative on all students under such reasonable rules and exceptions as the Faculty adopt, subject to the approval of the Executive Committee.

On motion, duly put and carried, the following persons were appointed a committee to draft and report to this Board a set of by-laws: Messrs. Jones, Deuel, Jamison, Falconer, and Leete.

Messrs. Hoover, Streator, and Scott were likewise appointed a committee to examine and report on the accounts of the Secretary, and Treasurer, and Farm Superintendent.

On motion, the Board now adjourned to 1.30 P.M.

#### AFTERNOON SESSION.

Board met at 1:30 o'clock P.M., was called to order, and proceeded to business.

The Committee on By-Laws made a partial report, which was accepted.

The Board now proceeded to ballot for Secretary, Treasurer, and a Committee of three on Farm Management, under the direction of tellers appointed by the President, with the following result:

Joseph Sullivant, having received a majority of all the votes cast, was declared duly elected to the office of Secretary, until the next annual election.

H. S. Babbitt, having received a majority of the votes cast, was declared to be elected as Treasurer, for the like term as the Secretary.

The balloting for Committee on Farm Management, was as follows:

#### FIRST BALLOT.

Mickey .....	6 votes.
Glaizer .....	3 "
Jamison .....	14 "
Jones.....	4 "
Ensign .....	9 "
Sullivant .....	3 "
Caldwell .....	1 "
Noble .....	3 "
Scott .....	1 "

Number of votes cast, 14.

Messrs. Jamison and Ensign were declared elected, until the next annual meeting, and the ballot for the third member proceeded.

SECOND BALLOT.

Mickey.....	4 votes.
Jones.....	3 "
Ensign.....	1 "
Sullivant.....	2 "
Caldwell.....	2 "
Noble.....	1 "
Scott.....	1 "

Number of votes cast, 14.

No one having received the requisite number of votes, another ballot was had.

THIRD BALLOT.

Mickey.....	4 votes.
Kinsinger.....	8 "
Scott.....	1 "

Number of votes cast, 13.

Mr. Kinsinger was declared elected.

On motion of Mr. Jamison, it was

*Resolved*, That the suggestions of President Orton, made to the Board this morning, together with the Farm Report, and vouchers, and all applications for positions, be referred to the Executive Committee.

A discussion now arose upon establishing a Chair of Mines, Mine Engineering, and Metallurgy, as required by the Legislature of Ohio.

The Board were agreed as to the importance and necessity of this department, as connected so intimately with the development and proper understanding of the great mineral wealth of the State; but, as the Legislature only provided for the equipment of the department, and not for the salary and maintenance of a Professor, the question was, how to do this, as it was quite evident that the funds of the College did not now easily permit it, unless by the discontinuance of some other chair. This was proposed, and the Chair of Political Economy and Civil Polity was suggested. This was opposed, in speeches, by Messrs. Leete, and Ensign, and advocated by Messrs. Deuel, Jones, and Scott; at the conclusion of which, Mr. Deuel offered the following, which was duly seconded and put :

*Resolved*, That the curriculum be changed, by striking therefrom the Department of Political Economy and Civil Polity, and substituting therefor the Department of Mines, Mine Engineering, and Metallurgy.

The ayes and nays being demanded on this resolution, the vote resulted as follows :

**Ayes**—Schneider, Scott, Hoover, Denel, Jones, Noble, Sullivant, Glazier, and Streater—9.

**Nays**—Kinsinger, Leete, Jamison, and Ensign—4.

So the resolution was decided in the affirmative.

A conversation was now entered upon concerning a suitable person to fill this newly created chair, and Mr. Sullivant said he had a person in view, whom he could recommend and endorse, to wit.: Mr. Henry Newton; concerning whom he made a brief statement, at the request of members; whereupon, on motion, it was

*Resolved*, That Henry Newton, A.M., M.E., be appointed Professor of Mines, Mine Engineering, and Metallurgy, in the Ohio Agricultural and Mechanical College, at the same salary as the other Professors.

This resolution passed without opposition.

Mr. Leete appeared before the Board with papers and documents in relation to the Virginia Military Lands donated to the College, and proceeded to make explanations, and answer questions in relation thereto, but gave way to a motion for adjournment until 7:30 o'clock P.M., which was put and carried.

#### EVENING SESSION.

Board met at 7:30 o'clock P.M., was called to order, and proceeded to business.

The Committee on By-Laws now completed their report and submitted it to the Board; and, on motion, duly put and carried, the following By-Laws were adopted:

#### BY-LAWS.

**SECTION. 1.** The officers of this Board shall consist of a President, Secretary, and Treasurer, who shall be chosen by ballot, at the first meeting of the Board, and at each annual meeting thereafter, and shall hold their offices until their successors are elected and qualified.

**SEC. 2.** There shall be elected at the first meeting of the Board, by ballot, and at each annual meeting thereafter, an Executive Committee, to consist of five members, who, when the Board is not in session, shall have the management and control of the affairs of the College, under the direction of the Board, which committee shall furnish to the Board, at every regular meeting thereof, or oftener if required by the Board, a full report of their proceedings in the management and control of the College.

**SEC. 3.** There shall also be elected, by ballot, at the first meeting of the Board, and at each annual meeting thereafter, a committee of three members, to have the supervision and direction of the management of the College farm and of the experiments made thereon, subject to the direction of the Board.

**SEC. 4.** The annual meetings of the Board shall be held on the third Wednesday of November of each year, at the city of Columbus, at 10 o'clock A.M., and the summer meeting of the Board shall be held at the College, on Tuesday of the week of the annual examination and commencement.

**SEC. 5.** The Treasurer shall keep an accurate account of all moneys put into his hands and drawn therefrom, and at the end of every quarter shall furnish the Executive



Committee, and at each annual meeting to the President of the Board, a detailed statement of all moneys by him received and disbursed, and he shall give bond (payable to the State of Ohio, for the use of the Ohio Agricultural and Mechanical College), in the sum of fifty thousand dollars, for the safe keeping of said funds and the payment of the same, in obedience to the rules and regulations of the Board, and for the faithful performance of his duties as said Treasurer.

SEC. 6. As soon as the Board shall be called to order, a quorum being present, the journal of the preceding day, or of the last meeting, shall be read by the Secretary, and, if necessary, corrected by the Board.

SEC. 7. When the journal shall have been read and corrected, as aforesaid, the Chairman shall state any matters of business to be acted upon, which shall be disposed of in such order as he may have it arranged, unless otherwise determined by a majority of the members present. Every motion or resolution that may be deemed necessary to be entered upon the journal shall be reduced to writing by the party offering the same, and the vote upon such motion or resolution shall be taken by yeas and nays, when demanded by any member, and recorded with the motion or resolution.

SEC. 8. The following officers of the Board, named in said act, shall each be entitled to receive an annual compensation for his services, payable quarterly, as follows: The Treasurer shall receive an annual salary of *four hundred dollars*.

SEC. 9. The Trustees shall each, at every meeting of the Board, present to the Secretary a statement in writing of the moneys by him expended in attending such meeting, who shall receive the same, and thereupon draw upon the Treasurer for the amount, which shall be paid by the Treasurer upon presentation.

SEC. 10. Before any money shall be paid into the Treasury, or any requisition made upon the Auditor of State in favor of the Treasurer (as provided in the act of Legislature passed March 22, 1870), the Secretary shall enter a correct account of the same in a book to be kept for the purpose, and certify all such money to the Treasurer; and the Treasurer shall not receive any money except upon such certificate or requisition; and all such certificates and requisitions shall be numbered in the order in which they shall be issued, in duplicate, the receipt of one of which shall be acknowledged upon its face by the Treasurer, and preserved by the Secretary in book form, and the other given to the Treasurer.

SEC. 11. No money shall be paid by the Treasurer except in pursuance of specific appropriations first made by the Board of Trustees.

SEC. 12. Every draft upon the Treasurer shall be drawn by the Secretary, numbered in consecutive order, and shall be made payable to the order of the person in whose favor the same may be made, and specify upon its face for what purpose it is drawn.

SEC. 13. No draft shall be drawn by the Secretary, except for the payment of fixed salaries, expenses of the members of the Board, stationery and postage, only upon the written order of the Executive Committee, the chairman thereof, or the person duly authorized by the Board.

SEC. 14. Every person receiving such draft upon the Treasury, shall sign a receipt for the same, which shall agree in date, number, and amount, with such draft; and all such receipts shall be preserved by the Secretary in book form. The Treasurer, upon receiving any such draft, shall, upon payment, cancel the same, as paid bank checks are canceled, and enter in his book the number, date, and amount of every such draft, and the name of the person to whom paid; and the said canceled drafts shall be by him carefully preserved as vouchers, for which he shall be credited in his settlements.

**SEC. 15.** There shall be appointed by the President at each annual meeting of the Board, a Committee on Finance, to consist of three members, who shall have the charge and report upon such matters as the Board may, from time to time, refer to the same; and shall also recommend, as, in the judgment of said committee, any measures that may be expedient, and that they may deem essential to the pecuniary interests of the Board.

**SEC. 16.** It shall be the duty of the Secretary to prepare the annual report of this Board, and submit it for approval or adoption at their annual meeting.

A communication from the Attorney-General, relative to a suit against B. S. Brown, *et al*, was now read and commented on, when, on motion of Mr. Ensign, it was

*Resolved.* That the suit against B. S. Brown be referred to the Executive Committee, with power to act.

This resolution was carried in the affirmative, as was also the following, offered by Mr. Deuel :

*Resolved,* That the Executive Committee be requested to secure the location of a Signal Service Station at the College.

On motion of Mr. Jones, it was

*Resolved,* That the acts of Sullivant, Secretary, and Babbitt, Treasurer, since the passage of the act of April, 1877, reorganizing the Board of Trustees of the Ohio Agricultural and Mechanical College, be and are hereby confirmed.

A communication from the State Grange, addressed to this Board, was now received, and referred to a committee of three, to wit—Messrs. Jones, Ensign, and Mickey, to report at a subsequent meeting.

On motion of Mr. Deuel, it was

*Resolved,* That the Executive Committee be and are hereby authorized to draw the sum of *four thousand five hundred dollars* (\$4,500), appropriated by the Legislature, to establish a school of Mines and Mining Engineering.

On motion of Mr. Jones, it was

*Resolved,* That Mr. William Colvin, who has heretofore been Professor of Political Economy and Civil Polity, a chair now abolished, is entitled to his pay for the college year just ended, as has been paid to him by the Treasurer, as the Board is informed.

On motion of Mr. Sullivant, the Board

*Resolved,* That the sum of *thirteen thousand dollars* (\$13,000) be and the same is hereby appropriated from the income fund of the College, in the State Treasury, for the support and maintenance of the College; and the Secretary and Treasurer are hereby authorized and instructed to draw the same as it may become necessary.

On motion, the Board

*Resolved,* That the resolution passed January 7th, 1876, authorizing the Executive Committee to lease lots on the College farm for building houses on the same, be and is hereby rescinded.

Also,

*Resolved*, That the President of the Executive Committee shall have power to call the Board together at other times than is provided by the rules, when such meeting may be deemed necessary.

On motion,

*Resolved*, That all unfinished business at this meeting be referred to the Executive Committee, with power to act.

On motion, the Board now adjourned *sine die*.

# APPENDIX.

# TESTS OF WOOD, IRON, AND STONE,

MADE IN THE PHYSICAL LABORATORY OF THE OHIO AGRICULTURAL AND  
MECHANICAL COLLEGE, 1877.

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The annexed tables contain the more important results of the use of the new testing machine up to the present time. The machine was put in place in September, and some weeks elapsed before suitably prepared specimens could be obtained with which to undertake a series of tests. It will be seen that the study of the different varieties of wood is the most complete, and it is believed that the tables containing these results are of considerable value. The tables will explain themselves. It might be stated that, in the crushing tests, the fibre of the wood was vertical, and the crushing weight given is that at which the cube "lost its life;" that is, up to this point the wood resists compression, although it sensibly diminishes in its thickness. When this point is reached the resistance seems suddenly to fall, the fracture occurs, the line of which generally approximates to an angle of forty-five degrees with the fibre, and further working of the pump only serves to reduce the thickness of the cube. These tests have been made, and the tables prepared, by Messrs. C. M. Bennett and C. H. Dietrich. The densities of the various specimens of wood were determined by Mr. A. C. Mills.

The same students have also begun a series of tests of building-stones, which promises to be of great interest and value. A few samples only have thus far been submitted to a crushing test, with results given in the annexed table.

The tests of metals have been thus far confined to the examination of the tensile strength of iron wire manufactured by Messrs. Hayden & Baker, of Columbus, Ohio, the samples having been furnished by that firm. This wire has been thoroughly tested in this respect in the case of the numbers represented in the table. In all cases, as many as twenty specimens of each number furnished the average upon which the compu.

tation of breaking weight per square inch was based. The tests were made, and tables prepared, by Messrs. N. M. Anderson and S. H. Short and, when completed, are to be followed by a complete examination of cast and wrought-iron, the various forms of steel, etc.

As before intimated, these tables are published as an indication of the character of the work, which, it is hoped, may be accomplished in the Laboratory, and in which the aid of all interested in the results is desired.

T. C. MENDENHALL.

RESULTS OF EXPERIMENTS TO ASCERTAIN THE TRANSVERSE STRENGTH OF TIMBER.

(The experimental beams were thirteen inches long by one inch square, supported at both ends and loaded in the middle. Twelve inches between supports. Tests made by Messrs. Bennett and Dietrich.)

Kind of Wood.	No. of specimen.	Deflection with 300 lbs. (inches.)	Deflection with 500 lbs. (inches.)	Ultimate deflection (inches.)	Breaking weight (lbs.)	Average breaking weight (lbs.)	Density.	Remarks.
White Oak ( <i>Quercus alba</i> )	1	.....	.....	.56	620	.....	.667	Specimens furnished by
"	2	.....	.....	.54	715	.....	.....	Hahn, Bellows & But-
"	3	.....	.....	.72	840	.....	.....	ler, Columbus, Ohio.
"	4	.....	.....	.76	730	.....	.....	
"	5	.....	.....	.72	800	741	.....	
White Ash ( <i>Fraxinus Americana</i> )	1	.....	.....	.76	760	.....	.615	do
"	2	.....	.....	.54	630	.....	.....	
"	3	.....	.....	.54	690	.....	.....	
"	4	.....	.....	.48	710	.....	.....	
"	5	.....	.....	.66	710	710	.....	
Beech ( <i>Fagus sylvatica</i> var. <i>ferruginea</i> )	1	.....	.....	.46	870	.....	.784	do
"	2	.....	.....	.34	830	.....	.....	
"	3	.....	.....	.32	650	.....	.....	
"	4	.....	.....	.42	840	.....	.....	
"	5	.....	.....	.54	850	808	.....	
White Pine ( <i>Pinus strobus</i> )	1	.....	.22	.60	650	.....	.462	do
"	2	.....	.31	.52	580	.....	.....	
"	3	.....	.44	.44	500	.....	.....	
"	4	.....	.40	.44	480	.....	.....	
"	5	.....	.41	.62	570	556	.....	
Yellow Poplar ( <i>Liriodendron tulipifera</i> )	1	.12	.....	.56	470	.....	.425	do
"	2	.23	.....	.62	399	.....	.....	
"	3	.22	.....	.62	390	.....	.....	
"	4	.14	.....	.58	410	.....	.....	
"	5	.12	.....	.64	476	427	.....	

Chestnut ( <i>Castanea vesca</i> )	1	.17	.30	.56	570	.....	.530	do
"	2	.13	.21	.53	630	.....	.....	
"	3	.15	.32	.47	550	.....	.....	
"	4	.18	.36	.54	600	.....	.....	
"	5	.16	.32	.50	590	.....	588	
Black Walnut ( <i>Juglans nigra</i> )	1	.12	.17	.38	740	.....	.623	do
"	2	.10	.15	.46	850	.....	.....	
"	3	.11	.22	.41	760	.....	.....	
"	4	.12	.17	.50	880	.....	.....	
"	5	.14	.22	.60	870	.....	820	
White Walnut ( <i>Juglans cinerea</i> )	1	.17	.34	.44	540	.....	.540	do
"	2	.16	.30	.46	530	.....	.....	
"	3	.16	.32	.58	600	.....	.....	
"	4	.16	.31	.48	570	.....	.....	
"	5	.14	.35	.54	600	.....	568	
Hard Maple ( <i>Acer saccharinum</i> )	1	.06	.13	.51	1050	.....	.731	do
"	2	.11	.15	.50	990	.....	.....	
"	3	.11	.16	.53	980	.....	.....	
"	4	.10	.18	.54	980	.....	.....	
"	5	.14	.21	.64	960	.....	992	
Soft Maple ( <i>Acer rubrum</i> )	1	.20	.48	.52	840	.....	.679	do
"	2	.10	.20	.58	930	.....	.....	
"	3	.11	.18	.41	800	.....	.....	
"	4	.10	.18	.41	940	.....	.....	
"	5	.10	.20	.55	880	.....	878	
Wild Cherry ( <i>Cerasus serotina</i> )	1	.14	.26	.59	690	.....	.536	do
"	2	.16	.28	.51	710	.....	.....	
"	3	.14	.25	.50	720	.....	.....	
"	4	.12	.23	.45	690	.....	.....	
"	5	.14	.16	.44	570	.....	672	
Hickory ( <i>Carya alba</i> )	1	.08	.16	.56	1130	.....	.....	Specimens furnished by Tuller Buggy Co., Co- lumbus, Ohio.
"	2	.14	.21	.81	1080	.....	.....	
"	3	.05	.16	.52	1090	.....	.....	
"	4	.09	.16	.64	900	.....	.....	
"	5	.07	.10	.58	1100	.....	1060	do
White Oak ( <i>Quercus alba</i> )	1	.13	.21	.55	850	.....	.....	
"	2	.12	.20	.57	860	.....	.....	
"	3	.10	.18	.57	860	.....	.....	
"	4	.11	.22	.48	700	.....	.....	
"	5	.12	.22	.45	670	.....	788	



## Results of Experiments, etc.—Continued.

Kind of Wood.	No. of specimen.	Deflection with 300 lbs. (inches).	Deflection with 500 lbs. (inches).	Ultimate deflection (inches).	Breaking weight. (lbs.)	Average breaking weight. (lbs.)	Density.	Remarks.
Hickory ( <i>Carya alba</i> )	1	.08	.14	.40	970	.....	.943	Specimens bought of Ohio Tool Co., Columbus, O.
"	2	.11	.13	.60	1230	.....	.....	
"	3	.11	.16	.80	1170	.....	.....	
"	4	.11	.18	.82	1230	.....	.....	
"	5	.07	.13	.60	1240	1168	.....	do
Beech ( <i>Fagus sylvatica</i> )	1	.13	.22	.64	850	.....	.693	
"	2	.12	.21	.58	840	.....	.....	
"	3	.14	.24	.61	860	.....	.....	
"	4	.12	.19	.61	1040	.....	.....	
"	5	.14	.22	.61	850	985	.....	do
Apple ( <i>Pyrus malus</i> )	1	.12	.18	.84	1010	.....	.808	
"	2	.12	.18	.76	1000	.....	.....	
"	3	.11	.21	.80	910	.....	.....	
"	4	.12	.19	.80	1100	.....	.....	
"	5	.09	.19	.90	1010	986	.....	
Georgia Pitch Pine ( <i>Pinus rigida</i> )	1	.09	.13	.52	1160	.....	1.150	Specimens furnished by U. S. B. S. Co., Urbana, Ohio.
"	2	.08	.12	.42	1000	.....	.....	
"	3	.10	.17	.54	1070	1077	.....	do
Georgia Yellow Pine ( <i>Pinus mitis</i> )	1	.03	.08	.36	900	.....	.....	
"	2	.10	.18	.42	800	.....	.749	
"	3	.06	.14	.58	1020	907	.....	do
Common Southern Pine ( <i>Pinus palustris</i> )	1	.12	.17	.50	450	.....	.553	
"	2	.12	.26	.50	600	.....	.....	
"	3	.10	.19	.60	760	670	.....	do
White Ash ( <i>Fraxinus Americana</i> )	1	.10	.14	.90	1050	.....	.654	
"	2	.10	.20	.98	1100	.....	.....	do
"	3	.14	.22	.76	1000	1050	.....	

Blue Ash ( <i>Fraxinus quadrangulata</i> ).....	1	.18	.28	.60	770	.....	.681	do
" " ".....	2	.12	.21	.62	910	.....	.....	
" " ".....	3	.08	.21	.62	950	877	.....	
Red Hickory ( <i>Carya alba</i> , heart-wood.....	1	.08	.16	.52	1440	.....	.785	do
" " ".....	2	.10	.14	.48	960	.....	.....	
" " ".....	3	.06	.10	.52	1250	1217	.....	
White Oak ( <i>Quercus alba</i> ).....	1	.11	.19	.54	870	.....	.718	do
" " ".....	2	.11	.24	.56	730	.....	.....	
" " ".....	3	.06	.14	.46	960	860	.....	
Yellow Poplar ( <i>Liriodendron tulipifera</i> ).....	1	.19	.38	.50	600	.....	.531	do
" " ".....	2	.21	.36	.57	500	.....	.....	
" " ".....	3	.12	.26	.44	650	583	.....	
Hemlock ( <i>Abies Canadensis</i> ).....	1	.12	.28	.68	600	.....	.565	do
" " ".....	2	.16	.30	.64	620	.....	.....	
" " ".....	3	.16	.34	.70	650	623	.....	

## RESULTS OF EXPERIMENTS TO ASCERTAIN THE TENSILE STRENGTH OF TIMBER.

(The specimens used were twelve inches long by one-half inch by one inch. Four inches between clutches.)

Kind of Wood.	No. of Specimen.	Breaking weight (lbs.).	Average breaking weight (lbs.).	Density.	Remarks.
White Oak ( <i>Quercus alba</i> )	1	6,190	.....	.667	Furnished by Halm, Bel- lows & Butler, Colum- bus, Ohio.
"	2	4,020	.....	.....	
"	3	5,860	.....	.....	
"	4	5,150	.....	.....	
"	5	6,010	5,446	.....	
White Pine ( <i>Pinus strobus</i> )	1	1,500	.....	.462	do
"	2	1,470	.....	.....	
"	3	1,400	.....	.....	
"	4	1,490	.....	.....	
"	5	1,850	1,542	.....	
Yellow Poplar ( <i>Liriodendron tulipifera</i> )	1	1,970	.....	.425	do
"	2	1,800	.....	.....	
"	3	2,170	.....	.....	
"	4	2,060	.....	.....	
"	5	1,850	1,970	.....	
Wild Cherry ( <i>Cerasus serotina</i> )	1	2,250	.....	.536	do
"	2	3,200	.....	.....	
"	3	1,760	.....	.....	
"	4	2,070	.....	.....	
"	5	2,630	2,382	.....	
Beech ( <i>Fagus sylvatica</i> )	1	3,270	.....	.764	do
"	2	3,640	.....	.....	
"	3	3,420	.....	.....	
"	4	4,380	.....	.....	
"	5	3,600	3,662	.....	
Hard Maple ( <i>Acer saccharinum</i> )	1	4,860	.....	.731	do
"	2	3,420	.....	.....	
"	3	4,950	.....	.....	
"	4	4,940	.....	.....	
"	5	3,410	4,316	.....	
Soft Maple ( <i>Acer rubrum</i> )	1	3,850	.....	.679	do
"	2	3,320	.....	.....	
"	3	3,720	.....	.....	
"	4	3,250	.....	.....	
"	5	3,250	3,474	.....	
Chestnut ( <i>Castanea vesca</i> )	1	2,190	.....	.530	do
"	2	2,870	.....	.....	
"	3	2,270	.....	.....	
"	4	1,960	.....	.....	
"	5	2,500	2,358	.....	
White Ash ( <i>Fraxinus Americana</i> )	1	3,810	.....	.616	do
"	2	3,910	.....	.....	
"	3	4,340	.....	.....	
"	4	3,900	.....	.....	
"	5	7,140	4,620	.....	
Black Walnut ( <i>Juglans nigra</i> )	1	4,000	.....	.623	do
"	2	3,770	.....	.....	
"	3	2,630	.....	.....	
"	4	3,550	.....	.....	
"	5	3,550	3,500	.....	

RESULTS OF EXPERIMENTS, ETC.—Continued.

Kind of Wood.	No. of Specimen.	Breaking weight (lbs.).	Average breaking weight (lbs.).	Density.	Remarks.
White Walnut ( <i>Juglans cineria</i> )	1	2,000	.....	.540	Furnished by Halm, Bel- lows & Butler, Colum- bus, Ohio.
"	2	2,100	.....	.....	
"	3	2,120	.....	.....	
"	4	2,220	.....	.....	
"	5	1,900	2,068	.....	
White Oak ( <i>Quercus alba</i> )	1	4,390	.....	.674	Specimens furnished by Tuller Buggy Co., Co- lumbus, Ohio.
"	2	4,610	.....	.....	
"	3	3,370	.....	.....	
"	4	4,320	.....	.....	
"	5	4,230	4,184	.....	
Hickory ( <i>Carya alba</i> )	1	10,000	.....	.694	do
"	2	9,660	.....	.....	
"	3	8,700	.....	.....	
"	4	9,870	.....	.....	
"	5	9,330	9,512	.....	
Beech ( <i>Fagus sylvatica</i> )	1	4,210	.....	.693	Specim'ns bought of Ohio Tool Co, Columbus, O
"	2	4,100	.....	.....	
"	3	5,700	.....	.....	
"	4	4,250	.....	.....	
"	5	3,800	4,412	.....	
Apple ( <i>Pyrus malus</i> )	1	6,000	.....	.808	do
"	2	6,160	.....	.....	
"	3	5,810	.....	.....	
"	4	5,750	.....	.....	
"	5	5,900	5,924	.....	
Georgia Pitch Pine	1	3,130	.....	1.150	Specimens furnished by U. S. R. S. Co., Urbana, Ohio.
"	2	3,320	3,225	.....	
" Yellow Pine	1	4,720	.....	.749	
"	2	4,000	4,360	.....	
Common Southern Pine	1	3,130	.....	.555	do
"	2	2,270	2,700	.....	
Hemlock	1	4,000	.....	.565	(Sap) do
"	2	7,000	5,500	.....	
White Ash	1	6,060	.....	.654	do
"	2	7,000	6,530	.....	
Blue Ash	1	4,700	.....	.681	do
"	2	3,000	3,850	.....	
White Oak	1	5,400	.....	.718	do
"	2	5,200	5,300	.....	
Yellow Poplar	1	1,790	.....	.531	do
"	2	1,750	1,770	.....	
Red Hickory	1	5,200	.....	.785	do
"	2	7,000	6,100	.....	

## RESULTS OF EXPERIMENTS TO ASCERTAIN THE CRUSHING STRENGTH OF TIMBER.

(The specimens used were inch cubes, set on end.)

Kind of Wood.	Weight required to crush speci- men.	Compression.	Density.	Remarks.
White Oak .....	8,000	.11	.667	Specimens furnished by Halm, Bellows & But- ler, Columbus, Ohio.
Y. Poplar .....	5,000	.08	.425	
White Pine .....	8,000	.09	.462	
Black Walnut .....	9,000	.06	.623	
White Walnut .....	8,000	.08	.540	
Hard Maple .....	10,000	.08	.731	
Soft Maple .....	10,000	.13	.679	
Cherry, Wild .....	9,000	.07	.536	
Beech .....	10,000	.06	.764	
White Ash .....	9,000	.09	.616	
Chestnut .....	8,000	.07	.530	
White Oak .....	8,000	.09	.....	Specimens furnished by Tuller Buggy Co.
Hickory .....	12,000	.09	.....	
Beech .....	10,000	.05	.693	Specimens bought of Ohio Tool Co., Columbus, O.
Apple .....	10,000	.04	.808	
Hickory .....	14,000	.05	.943	
Box-wood ( <i>Buxus sempervirens</i> ) .....	13,000	.08	.823	
Lignum Vitae ( <i>Guaiacum officinale</i> ) .....	14,000	.08	1.320	
Rose-wood ( <i>Dalbergia nigra</i> ) .....	17,000	.11	9.50	
Cocoa ( <i>Cocos nucifera</i> ) .....	17,000	.06	1.255	
Georgia Pitch Pine .....	12,000	.08	1.150	
" Yellow Pine .....	13,000	.06	.749	
Common Southern Pine .....	10,000	.07	.555	
Hemlock .....	10,000	.07	.565	Specimens furnished by the United States Roll- ing Stock Co., Urbana, Ohio.
White Ash .....	10,000	.07	.654	
Blue Ash .....	9,000	.07	.681	
White Oak .....	9,000	.05	.718	
Yellow Poplar .....	6,000	.06	.531	
Red Hickory .....	11,000	.06	.785	

RESULTS OF EXPERIMENTS FOR FINDING THE CRUSHING STRENGTH OF STONE.  
(The specimens used were two inch cubes on their natural bed.)

Kind of stone.	Locality of quarry.	Amount required to crush specimen.	Pressure at which the first split ap- peared.	Density.	Remarks.
Niagara Buff .....	Springfield, Ohio.....	38,000	.....	2.69	
Grey Limestone .....	Putnam Hill, Jackson county.....	28,120	.....	2.61	
Water Limestone .....	Greenfield .....	42,000	15,000	2.67	
Limestone—Corniferous .....	Columbus .....	23,540	1,140	2.64	
Sandstone—Brown Waverly .....	Pike county .....	13,340	5,620	2.37	
Sandstone—White Waverly .....	.....	15,000	8,000	2.53	
.....	.....	12,650	.....	2.53	
Waverly .....	.....	20,000	16,000	2.53	
Beura Vista.....	.....	14,760	10,000	2.60	
Amherst .....	Amherst .....	17,550	12,000	2.42	
Berea .....	Berea .....	20,000	11,650	2.36	
Amherst.....	Amherst.....	12,000	6,000	.....	Did not crush entirely.

TESTS OF TENSILE STRENGTH OF IRON WIRE—UNANNEALED.

(Specimens furnished by Messrs. Hayden & Baker. Made by Messrs. Anderson & Short.)

Wire No. 6.			Wire No. 8.			Wire No. 9.			Wire No. 11.			Wire No. 12.		
No. of specimen.	Diameter in inches.	Breaking weight, in pounds.	No. of specimen.	Diameter in inches.	Breaking weight, in pounds.	No. of specimen.	Diameter in inches.	Breaking weight, in pounds.	No. of specimen.	Diameter in inches.	Breaking weight, in pounds.	No. of specimen.	Diameter in inches.	Breaking weight, in pounds.
1	.195	2720	1	.167	1950	1	.145	1450	1	.124	1150	1	.106	860
2	.193	2760	2	.167	2040	2	.145	1490	2	.120	1040	2	.106	890
3	.194	2760	3	.165	2040	3	.146	1450	3	.120	1050	3	.105	870
4	.195	2770	4	.166	2050	4	.146	1420	4	.120	1060	4	.106	910
5	.195	2730	5	.167	2050	5	.145	1440	5	.119	1090	5	.106	950
6	.193	2730	6	.165	2000	6	.145	1425	6	.119	1060	6	.107	950
7	.195	2700	7	.166	1950	7	.145	1400	7	.119	1030	7	.106	940
8	.195	2760	8	.166	2025	8	.145	1430	8	.120	1000	8	.107	930
9	.195	2710	9	.166	1830	9	.146	1500	9	.119	1020	9	.107	910
10	.194	2650	10	.164	2010	10	.145	1410	10	.119	1020	10	.106	950
11	.195	2730	11	.164	2040	11	.145	1420	11	.120	1030	11	.106	800
12	.195	2710	12	.166	2015	12	.145	1435	12	.120	1020	12	.107	860
13	.193	2760	13	.166	2010	13	.145	1440	13	.119	1040	13	.107	930
14	.195	2750	14	.167	2030	14	.145	1410	14	.119	1020	14	.107	950
15	.195	2710	15	.166	2060	15	.146	1470	15	.120	1040	15	.107	900
16	.195	2790	16	.167	2070	16	.145	1460	16	.120	1030	16	.106	870
17	.194	2740	17	.166	2060	17	.145	1450	17	.119	1010	17	.107	930
18	.194	2710	18	.167	2020	18	.146	1450	18	.120	1020	18	.107	870
19	.195	2720	19	.166	2000	19	.145	1470	19	.119	1040	19	.107	950
20	.194	2730	20	.167	1940	20	.145	1440	20	.119	1030	20	.107	950
Average	.194	2738	Average	.165	2011	Average	.145	1445	Average	.120	1040	Average	.106	908

Area section.....	.02954	Area section.....	.01673	Area section.....	.01134	Area section.....	.00897
B. W. per sq. in. ....	92544	B. W. per sq. in. ....	85977	B. W. per sq. in. ....	91707	B. W. per sq. in. ....	101151
Largest.. 11	Highest.. 1	Largest.. 15	Highest.. 9	Largest.. 1	Highest.. 1	Largest.. 19	Highest 19
Smallest.. 6	Lowest... 7	Smallest.. 7	Lowest.. 7	Smallest.. 9	Lowest.. 8	Smallest.. 3	Lowest 11

TESTS OF TENSILE STRENGTH OF IRON WIRE—ANNEALED.

(Specimens furnished by Messrs. Hayden & Baker. Made by Messrs. Anderson & Short.)

Wire No. 6.			Wire No. 8.			Wire No. 9.			Wire No. 10.			Wire No. 11.		
No. of specimen.	Diameter in inches.	Breaking weight, in pounds.	No. of specimen.	Diameter in inches.	Breaking weight, in pounds.	No. of specimen.	Diameter in inches.	Breaking weight, in pounds.	No. of specimen.	Diameter in inches.	Breaking weight, in pounds.	No. of specimen.	Diameter in inches.	Breaking weight, in pounds.
1	.193	1250	1	.163	1220	1	.151	1170	1	.140	870	1	.124	750
2	.193	1210	2	.162	1260	2	.151	1060	2	.140	890	2	.124	760
3	.193	1220	3	.162	1240	3	.151	1080	3	.140	900	3	.122	760
4	.193	1240	4	.162	1180	4	.151	1000	4	.140	910	4	.124	750
5	.193	1250	5	.162	1250	5	.151	1000	5	.139	920	5	.124	750
6	.193	1240	6	.162	1240	6	.151	990	6	.140	930	6	.121	760
7	.193	1270	7	.162	1230	7	.151	1040	7	.140	910	7	.124	740
8	.193	1210	8	.162	1250	8	.152	1050	8	.140	920	8	.124	730
9	.193	1240	9	.162	1230	9	.151	1070	9	.140	910	9	.124	740
10	.193	1290	10	.163	1240	10	.152	1030	10	.139	890	10	.124	750
11	.193	1260	11	.162	1240	11	.152	1000	11	.140	890	11	.124	730
12	.193	1260	12	.161	1220	12	.152	1040	12	.139	930	12	.124	770
13	.193	1280	13	.162	1260	13	.153	1080	13	.139	900	13	.124	790
14	.193	1240	14	.162	1200	14	.152	1020	14	.140	900	14	.124	760
15	.193	1250	15	.162	1250	15	.153	1040	15	.140	930	15	.124	780
16	.193	1220	16	.162	1210	16	.151	1030	16	.140	920	16	.124	770
17	.193	1220	17	.162	1230	17	.153	1130	17	.138	870	17	.124	780
18	.193	1220	18	.161	1280	18	.153	1030	18	.140	930	18	.124	770
19	.193	1220	19	.162	1240	19	.153	1050	19	.139	920	19	.124	750
20	.193	1210	20	.162	1210	20	.151	1070	20	.140	920	20	.124	780
Average	.193	1239	Average	.162	1234	Average	.152	1049	Average	.140	908	Average	.124	760

Area section . . . . .	.03083	Area section . . . . .	.02070	Area section . . . . .	.01813	Area section . . . . .	.01528	Area section . . . . .	.01207
B. W. per sq. in. . . . .	59583	B. W. per sq. in. . . . .	59602	B. W. per sq. in. . . . .	58219	B. W. per sq. in. . . . .	59383	B. W. per sq. in. . . . .	62928
Largest . . 2	Highest . 10	Largest . . 1	Highest . 18	Largest . 17	Highest . 17	Largest . 8	Highest . 20	Largest . 13	Highest . 13
Smallest . . 2	Lowest . . 2	Smallest . 12	Lowest . 4	Smallest . 6	Lowest . 6	Smallest . 17	Lowest . 17	Smallest . 3	Lowest . 8



## ADDITIONAL ANALYSES.

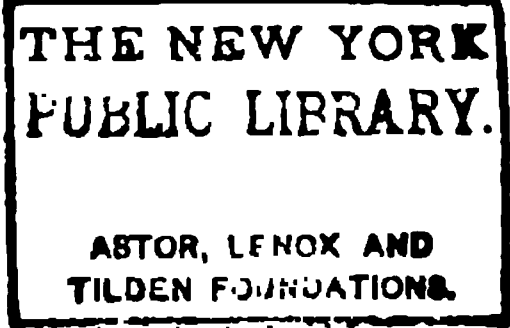
(From the Chemical Laboratory. Executed by Curtis C. Howard.)

1. Sandstone from the Cincinnati Group, Grant county, Kentucky—	
Silicic acid.....	94.40
Ferric oxide.....	3.96
Alumina oxide .....	trace.
2. Sand from Mad River Bottoms, Springfield, Ohio—	
Carbonate of lime .....	17.90
3. Bone bed—Carboniferous Limestone, Columbus, Ohio, for phosphates—	
Phosphate of lime .....	18.32
Phosphoric acid .....	8.39
Lime.....	9.93

### ANALYSES OF THREE BENCHES OF COAL No. 6, (NELSONVILLE SEAM,) ON LAND OF HARDEN FURNACE COMPANY, VINTON COUNTY, OHIO.

	1.	■	■
Moisture .....	5.29	5.19	5.87
Volatile matter.....	31.24	31.95	35.63
Fixed carbon .....	48.03	54.03	45.89
Ash .....	15.44	8.83	9.61
	100.	100.	100. -
Sulphur .....	2.58	1.93	.94
Specific gravity.....	1.47	1.44	1.31







OHIO STATE UNIVE' SITY.

EIGHTH ANNUAL REPORT

OF THE

BOARD OF TRUSTEES

OF THE

OHIO STATE UNIVERSITY,

TO THE

GOVERNOR OF THE STATE OF OHIO,

FOR THE YEAR 1878.

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COLUMBUS:

NEVINS & MYERS, STATE PRINTERS.

1878.

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ALICE WILLIAMS,

*Assistant in Department of Modern Languages.*

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JOSIAH R. SMITH, A.B., *Librarian.*

MARY F. MORRISON, *Assistant Librarian.*

NAT. W. LORD, M.E., *Assistant in State Laboratory.*



COLUMBUS, OHIO, *November 29, 1878.*

*To His Excellency Governor, RICHARD M. BISHOP:*

SIR: I have the honor to transmit herewith the Eighth Annual Report of the Board of Trustees of the Ohio State University, with a transcript of their proceedings, "and such other matters as may be supposed useful."

Very respectfully, your obd't serv't,

ALBERT ALLEN, *Secretary.*



## REPORT OF BOARD OF TRUSTEES.

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An act of the Sixty-third General Assembly of Ohio, passed May 1st, 1878, contains, in part, the following :

**SECTION 1.** *Be it enacted by the General Assembly of the State of Ohio,* That the educational institution heretofore designated as the Ohio Agricultural and Mechanical College shall be known and designated hereafter as "The Ohio State University."

**SECTION 2.** The government of said university shall be vested in a board of seven trustees, who shall be appointed by the governor of the state, with the advice and consent of the senate; but no trustee, or his relation by blood or marriage, shall be eligible to any professorship or position in the university, the compensation for which is payable out of the state treasury, or said college fund.

**SECTION 3.** The members of said board of trustees, and their successors, shall hold their offices for the term of seven years each: provided, that the trustees first appointed under the provisions of this act shall hold their terms for one, two, three, four, five, six, and seven years, respectively, to be fixed by the governor in their commissions. In case a vacancy shall occur from death or other cause, the appointment shall be for the unexpired term. The trustees shall not receive any compensation for their services, but they shall be paid their reasonable and necessary expenses while engaged in the discharge of their official duties.

**SECTION 7.** The board of trustees shall cause to be made, on or before the first day of January of each year, a report to the governor of the condition of said university; the amount of receipts and disbursements, and for what the disbursements were made; the number of professors, officers, teachers, and other employes, and the position and compensation of each; the number of students in the several departments and classes, and the course of instruction pursued in each; also, an estimate of the expenses for the ensuing year; a statement showing the progress of said university, recording any improvements and experiments made, with their costs, and the results, and such other matters as may be supposed useful. There shall be printed, under the provisions of section seven (7) of the act passed March 30, 1875 (O. L., volume 72, page 179), in pamphlet form, one thousand copies of said report for the general assembly, one thousand for the president and faculty of said college, and three thousand copies for distribution by the trustees in their several districts, in such manner as they shall deem best for the interests of said university. The president of said university shall transmit by mail one copy to the secretary of the interior, and one copy to each of the colleges which are or may be endowed under the provisions of the act of congress of July 2, 1862.

Under the provisions of sections 2 and 3 of this act, the present Board was appointed and confirmed, and received from the Governor, on the

19th day of May, 1878, their several commissions, for the following terms:

- James B. Jamison, for the term of one year.
- S. H. Ellis, for the term of two years.
- Stephen Johnston, for the term of three years.
- Thomas J. Godfrey, for the term of four years.
- Alston Ellis, for the term of five years.
- T. Ewing Miller, for the term of six years.
- J. H. Anderson, for the term of seven years.

After taking the oath of office, and effecting a temporary organization, the Board proceeded at once to a general inspection of the grounds, buildings, library, apparatus, cabinets, and other equipments of the institution. An opportunity was also offered of witnessing the military drill.

During the subsequent sessions of the same meeting a permanent organization of the Board was effected by the election of—

*President*—Thomas J. Godfrey.

*Secretary for balance of fiscal year*—Joseph Sullivant.

*Treasurer for same term*—Henry S. Babbitt.

*Executive Committee*—Messrs. J. H. Anderson, T. Ewing Miller, and Stephen Johnston.

*Farm Committee*—Messrs. S. H. Ellis, James B. Jamison, and J. H. Anderson.

*Finance Committee*—Messrs. T. Ewing Miller, Alston Ellis, and Stephen Johnston.

No change was made at that time in any of the employés of the University. Mr. Chas. E. Thorne was continued as Farm Superintendent until April, 1879.

During the year five meetings of the Board have been held—one in May, one in June, one in September, and two in November—detailed reports of the proceedings of which can be found on the succeeding pages of this report.

The Board have, by these repeated sessions, endeavored to acquaint themselves with the condition and progress of every interest connected with the University, and to adopt such measures looking to the management of the farm, incidental repairs, and improvement of the buildings, the efficient and faithful discharge of professorial duties, the attendance and deportment of students in the class-room and military drill, and other matters pertaining to the general welfare of the institution.

The last session closed June 19th, 1877, with one hundred and fifty-five students in attendance. The number of matriculates for the present terms is one hundred and ninety-eight. Though not equal in number to the class of last year at the same period, the standard of scholarship is higher. Fifty-two counties of the State are now represented in the University.

A list of the corps of professors now engaged in the various departments is given on a previous page of this report.

At the June meeting of the Board a communication was received from Thomas C. Mendenhall, Professor of Physics and Mechanics, tendering his resignation, with a view to accepting a similar professorship in the Imperial University of Tokio, Japan. Professor Mendenhall is a gentleman of eminent ability, greatly devoted to his calling, and well calculated to elevate the rank of his department, and it was with deep regret that the Board parted with his services in the institution.

After correspondence with eminent physicists and educators, the chair thus vacated was tendered to the present incumbent, S. W. Robinson, Professor of Mechanical Engineering and Physics in the Illinois Industrial University, who entered upon the duties of the same at the beginning of the session.

About the same time, President Orton offered his resignation as President of the University, but did not propose to sever his connection as Professor of Geology. He has filled the position that he now holds with dignity and honor since 1873, and the necessity of having such an executive officer at all times in the institution, together with the difficulty in immediately and properly filling so responsible a position, induced the Board to lay his resignation on the table for future consideration and action.

The requirements of an institution in which are taught so many and different branches of learning, thus calling for large, scholarly attainments in its literary head, and which needs both to be presided over in its internal affairs with great discretion, and made reputable and attractive without, demand great care and consideration in the selection of a fitting representative head. Hence no definite action has yet been taken, looking to a new appointee.

The classification of students, the number in each department, and the hours per day occupied in recitations, together with the course of instruction as pursued by each professor, will appear in detail in their several reports herewith submitted as part of this report.

For the more perfect regulation of the department of Military Science and Tactics, a complete set of rules (see Board proceedings) have been adopted, giving it a position among the schools of the University and the instruction therein an academic value. The President of the Board is now in correspondence with the War Department for the purpose of securing the detail of Lieutenant Lomia as professor of this department for two years longer.

The chair of Civil Polity and Political Economy has been abolished.

Arrangements have been made for a course of popular lectures by the Faculty on the sciences pertaining to agriculture, for the benefit of all who may desire to attend. These lectures are to begin January 9th, and continue four weeks, and we have reason to believe will be largely attended, and do much so call the attention of the public to the liberal and practical character of the instruction furnished for the industrial classes.

The Library has been increased by the purchase of books on agriculture, botany, mining, metallurgy, English language and literature, and geology.

The boarding house was thoroughly repaired, and leased to a satisfactory party, Hon. E. P. R. Baker, who is required to furnish good boarding, lodging, and fuel to students at a rate not to exceed \$3.50 per week, and under whose management it is now being well conducted.

Two thousand circulars, conveying information concerning the course of instruction, terms of admission, and other desirable information, with the report of 1877, have been widely distributed.

The former officers of the Board were reëlected for the ensuing fiscal year, except the Secretary, whose place was supplied by the election of Albert Allen, of Columbus.

The salaries of all officers of the Institution, the compensation of employés, and all receipts and disbursements, in detail, will appear in the report of the Treasurer.

Mr. Charles A. Barton, of Portsmouth, Ohio, has been employed agent of the University to have the care and sale of the Virginia Military lands in this State.

The Board regret that they have not been able as yet to reach any positive settlement with Mr. Leete, who was employed by a former Board to locate and make sale of these lands. The matters at issue are now referred to Attorney-General Pillars, Judge M. A. Daugherty, Hon. Stephen Johnston, and Hon. Thomas J. Godfrey, with full powers to investigate and take such action as in their judgment is both just and equitable to Mr. Leete and the University, and that this action shall be final and conclusive.

The Board beg leave to call the attention of the Legislature to that portion of President Orton's report which refers to the chemical analyses of the minerals and fertilizers of the State that the University is obliged by law to furnish, and to ask favorable consideration for the amended scheme which will be presented during the coming session.

Without presenting an itemized estimate of the expenses of the University for the ensuing year, it will be safe to say that the salaries of the professors and officers, the wages of other employés, the unavoidable expense of repairs, and the needed improvements to preserve the *present*

status, it is reasonable to suppose will require the full amount of the annual income derived from the endowment fund. Besides these *ordinary and usual* expenditures, there are other matters of vital importance to the well-being of the University, calling for some appropriation from the State. Among these are the following, viz:

For equipment of Mechanical Laboratory (see report of department)	\$5,000 00
solar compass and telescope.....	1,000 00
wall and table cases for geological museum .....	1,500 00
gymnastic and drill hall (needed in winter) .....	6,000 00
green-house for Botanical Department .....	5,000 00
landscape improvements on campus .....	2,500 00
desks in Chemical Department .....	300 00
equipment of Physiological Laboratory .....	750 00
equipment of department of Drawing and Engraving .....	1,500 00
farm improvements and stock.....	5,000 00
<b>Total .....</b>	<b>\$28,550 00</b>

Since the organization of the College in 1873, the only appropriation made by the State to this institution was the insufficient sum of \$4,500, to equip a School of Mines and Mining Engineering. The institution has been maintained and supported *alone* from the interest accruing on the fund derived from the sale of lands under the Congressional grant, the Virginia military lands, and the Franklin county bonds.

The Legislature has at different times authorized the payment of the necessary and reasonable expenses of the Board of Trustees while in the discharge of their official duties, but have failed to make any appropriations from year to year to meet the same since 1871. These expenses to the present time aggregate \$4,253.84, and have been paid out of the interest fund of the University. It seems but just that this sum should be returned by the State.

The success of the University has been hitherto, and is still, greatly hindered by reason of its meager financial resources, and the Board can but express the hope that the same fostering care extended by the Legislature through legitimate appropriations to *other* State institutions, will not be withheld from this. Every State has, by the law of the general government creating these institutions, been made, in a special manner the guardian of this national gift, relying in each case upon a commendable rivalry and State pride to encourage their growth and usefulness. In this just competition, other sister States have made large annual appropriations to their several institutions, and we have reason to hope and believe that Ohio will not be indifferent to the wants and welfare of *her* ward.

ALBERT ALLEN,  
*Secretary of the Board.*

## REPORT OF PRESIDENT.

---

HON. T. J. GODFREY, *President of Board of Trustees of Ohio State University:*

DEAR SIR: I hereby present my sixth annual report of the institution now under your care. The report covers the year ending November 1, 1878.

Several important changes have taken place in the institution during the year.

1. In the first place its name has been changed by act of the Legislature. The old title was a cumbrous and misleading one—misleading, at least, as far as the present organization and courses of study are concerned. To many who heard it, the name *Agricultural and Mechanical College*, suggested an institution in which compulsory manual labor on the College farm and the teaching of the several mechanical trades, were leading and essential features. Such persons, when they found the institution a well equipped and liberally conducted school of science, would naturally feel that it was false to its appointed mission. I will not enter upon the disputed questions as to the proper aim and work of institutions founded on the land grant. I have only to say that so long as the course of instruction originally established here shall be maintained, the old title would prove somewhat of a misnomer. I have expressed these views in several previous reports and have urged that a change of title might prove advantageous to the institution.

The new name, however, *Ohio State University*, does not seem to me to be free from objection. The term *university* has acquired quite a definite signification, and can be applied, with strict propriety, to institutions of large range and varied faculties only. This institution has not yet attained to university proportions, and calling it a university does not make it one, in all the senses of the word. If the Legislature, however, in this change of title, foreshadows its purpose to expand the college into a university worthy of the name, any present incongruities can well enough be borne.

2. In the second place, the institution has lost during the year one of its most successful and accomplished teachers. Prof. Thomas C. Mendenhall resigned, in June last, the chair of Physics and Mechanics, which he had held from the opening of the college, to accept a similar professorship in



the Imperial University of Tokio, Japan. His department was conducted from the first with signal ability and success. There is scarcely an institution in the country in which so much instruction is given by laboratory methods, in the subject of Physics, as has been furnished in this. The unusual advantages thus offered were appreciated by the students who were gathering here, and the Physical Laboratory has been a constant center of attraction. While Professor Mendenhall's withdrawal from the college was deeply regretted by his associates in the faculty as a loss of no small moment to the institution, they could not but see that he had no right to refuse the unusual opportunities that were offered to him, so honorably bestowed and so well deserved.

3. Prof. S. W. Robinson was called from the Illinois Industrial University to fill the vacancy caused by Professor Mendenhall's resignation. He accepted the position, and entered upon his work at the opening of the academic year, in September last. He held in the Illinois University the position of Professor of Mechanical Engineering and Instructor in Physics. Our professorship covers the same ground, but the subjects are named and have been developed in reverse order, almost the whole equipment and the main force of the department having been given to Physics. I believe that the best interests of the University have been subserved by the course thus far pursued. We have now a Physical Laboratory decidedly superior to any other west of the seaboard. In calling Professor Robinson to fill the vacancy, you have secured the best trained and most successful professor of Mechanical Engineering in the West, and in so doing, you have signified your purpose to give to this side of the department a balanced and proportionate expansion. The result will be that, by moderate appropriations, we shall have two well-equipped divisions of this important department. It is necessary to remember, however, that we shall ultimately have full work for two men. The Physical Laboratory would not be what it is if it had not received a very large part of the labor and enthusiasm of the accomplished professor who built it up to its present proportions, nor would Professor Robinson's department in the Illinois University have attained the reputation which it enjoys unless it had always been his main work. The inference is plain, that a division of these subjects must be effected in order to secure the most successful treatment of each. I trust that provision can be made for this result before many years elapse.

The Mechanical Laboratory, with its hand-training and other practical applications, is sure to be recognized as an invaluable addition to our educational resources. It supplements our work on the side where it is most criticised and where it is confessedly weakest. I cordially indorse

the application made by Professor Robinson for increased facilities in his department.

4. During the past year the Department of Mining and Metallurgy has been put into successful operation. Its establishment was counted a most auspicious event for the University; its maintenance in efficiency and vigor cannot be an open question. It is true that the number of students now in it is small, but this results from the fact that the work in this department properly and necessarily comes in the later years of the student's college course. A fair proportion of our young men are expecting to enter upon this line of study as soon as they can reach it in due course, and a few have already entered the University expressly to avail themselves of the Mining Engineering course. Such a department in an institution like this could be filled at once with students only by the arts of the charlatan and sciolist. No useful purpose could be answered by crowding its lecture-room with the halt and the blind. Mining Engineering is a special application of knowledge that has been gained in other fields, as Mathematics, Chemistry, Physics, and other fundamental branches. This preliminary knowledge the student must have before he can apprehend or assimilate the specific and technical training imparted here.

By the act of the Legislature which gave to the University the equipment of the Mining Department, a provision was made for the analysis of all the minerals of the State that should be sent in for this purpose, without expense to the parties sending them. The law is crudely drawn in this particular. If its provisions were generally known, and if the University were obliged to make prompt analyses of all the coals and ores and limestones and clays that interest and curiosity should send in, the pittance given by the State for the foundation of the department would soon be swallowed up, and a vast and oppressive burden would be imposed upon the institution.

The present Legislature, seeing that provision was made for mineral analyses at the University without expense to the parties asking for them, sought to extend similar advantages to the agricultural community, and passed an act requiring "the professor occupying the chair in the chemical and mechanical department" of this institution to furnish, without charge, an analysis of each and every artificial fertilizer offered for sale in the State that shall be sent to him for this purpose. A penalty is further affixed to the selling of such fertilizers without a printed analysis of the same.

This act was, to say the least, not duly considered. To comply with its obvious intent would require the undivided time of more than one

professor. To say nothing of the many grave practical difficulties that must attend the operation of the law as it now stands, it is not probable that the Legislature designed to reduce the teaching force of the University to any such extent as will necessarily follow the efficient execution of its action.

With the real aim of both these requirements I am in hearty accord. They recognize the fact that the State has a right to look to this institution for efficient and practical service in all the departments of applied science. If the University is not able or willing to render such service, then it has certainly failed in its office, and should be called to a strict account. But the demands for service should be intelligent and just and practicable. The present statutes, in my judgment, fail in all of these respects.

The subject is one of real importance to the University, and deserves the immediate and careful consideration of the Board. I can not doubt that the present Legislature would cheerfully amend the existing statutes so as to make them fair and practicable, if the Board should formally call attention to the facts of the case. I am also confident that the professors in charge of the departments concerned could readily devise a scheme by which all the public objects aimed at could be successfully accomplished, while at the same time very many of the demands of corporations and individuals for scientific assistance in their various branches of business could be amply met, and all this without charging the University with a duty that it can never perform or obstructing it in its proper work of education.

By the action of the present Legislature the subject of military drill has been made optional. This action changes essentially the *status* of the Military Department. It is still, however, rendering good service to the institution. About one-half of the young men in the University have elected the drill for the present year, and, under the stringent regulations adopted by the Board of Trustees to govern the action of students so electing, a vigorous organization is maintained.

The points above enumerated comprise the new elements and the principal changes in the University for the present year.

In all other respects it has followed in the lines of work and development already laid down. The year is marked by the graduation of the first class of the University. Six young men having duly completed the prescribed courses of study for two of its several degrees, received the diplomas that attest this fact.

The rate of increase in numbers which has held thus far has not been fully maintained this year. During the year three hundred and nine

(309) students have been in attendance, which is an increase of fifty-four over last year's attendance, or a gain of about twenty per cent.

Fifty-two counties of Ohio are represented in the catalogue that accompanies this report. There are one hundred and ninety-eight students enrolled on the register of the present term. At this time last year there were two hundred and eleven names on the list. There is, however, no real falling off in the attendance of properly qualified students. It will be remembered that in 1877 an ill-judged experiment was made in lowering the requirements for entrance to the college. Under these lower demands about twenty students obtained admission to the institution that were in no way properly prepared to do the college work. Most of these students lost their places by failure to sustain examinations before the year went by. The original standard of qualification was fortunately restored one year ago. No one who inspects the questions used in the entrance examinations of the present academic year will demand that the standard of admission shall be lowered. A list of these questions is given in this report.

An effort was made last winter to establish in the college a course of lectures on the sciences relating to agriculture for the benefit of the young farmers of the State who are unable to pursue an extended and regular course of study. The scheme proposed four lectures a day for ten weeks. It was to be illustrated and made as serviceable as possible by the use of the excellent facilities of the institution. No entrance examinations were required. The scheme was widely advertised, but there was no adequate response. Seven applicants appeared, but it was not deemed right to devote the necessary time and effort required for the lectures to so small a number.

Many prominent agriculturists interested themselves in the scheme, and urged the renewal of the offer in a modified shape. In accordance with these suggestions, and with the permission of the Board, the faculty has again arranged a scheme of lectures, which is now offered to the farmers of Ohio. The time of the course has been reduced to four weeks, and Thursday, January 9, 1879, has been fixed upon as the date of opening. The giving of the course has been made contingent upon the application of thirty persons by or before December 9th. This number has not yet been reached. I recommend that a small appropriation be made for the immediate distribution of a circular setting forth the above facts. The announcement has already been made in the summer circular of the University and through the press to a considerable extent, but nothing should be left undone by which the question whether any adequate demand exists in the State for service of this kind, can now

be settled. Despite the failure of last winter I cannot doubt that if the real character of the scheme can be brought fairly before the farmers of Ohio, there will be a large response.

The order of the institution has been excellent throughout the year, and a large amount of earnest and successful study has been done in the several departments.

For specific information as to the work, the equipments, and the necessities of these several departments, you are respectfully referred to the accompanying reports of the University faculty. In regard to their requirements, as stated in the reports, I have only to say that, in my judgment, the wants are all real, and that all the funds that can be granted for their supply will advance the interests of the University.

I trust that the needs of the library will not be overlooked. The books already on the shelves are largely used by faculty and students, and every book that is added comes into immediate requisition.

I call attention to the fact that the University farm supplies a considerable amount of work to students, and that the money so earned prolongs the stay of quite a number of earnest and capable young men in the institution. I am in the constant receipt of letters from others of the same class who desire to meet their expenses, in part at least, by their labor. The farm manager is prepared, I believe, to indicate plans by which a larger amount of labor can be utilized, and I cordially commend the consideration of these plans to the Board. The students that we get in this way know for what they are here, and almost without exception bring to their work a measure of manliness and earnestness that insures success in their scholastic work.

The details of my professorial work can be learned from the following statements:

My professorship embraces the subjects of Geology, Paleontology, and Physical Geography. To it is also added such instruction in General History as has thus far been furnished in the University.

The work in Geology and Paleontology is arranged in a two years' course. The first year's work consists of daily lectures and recitations; the second year's work, of paleontological or laboratory practice. Each student who takes the second year is obliged to give two and one-half hours daily to the museum or laboratory. Classes here are not practicable, and each student needs the constant supervision and assistance of the professor.

My classes during the year have ranged as follows:

Class in First Year Geology, 1877-8 .....	15 members.
“ Second Year Geology, 1877-8 .....	3 “
“ Physical Geography, 1877-8 .....	58 “

Class in First Year Geology, 1878-9.....	17 members.
“ Second Year Geology, 1878-9.....	7 “
“ Elementary Paleontology, 1878-9.....	31 “
Whole number of students in department during year .....	131
Deducting those reported more than once.....	26
Whole number of different students.....	105

The class in General History for 1877-8 consisted of 52 students. The whole number of students instructed in my classes through the year amounts to 183.

Additions are constantly made to the Geological Museum. We have some material for exchanges, and the work of collection has never been abandoned. The material already accumulated is valuable, and deserves better care than it is possible to give it now. The need of glass cases for its protection and proper display is imperative. I trust that the Board will be able to take some steps in this direction very soon. It would seem to be an object for which an appropriation might very properly be asked from the Legislature, as the nucleus of the present collection was the property of the State, and was turned over to the University for safe-keeping. To make such a gift without providing the means for its proper preservation, is doubtful generosity.

Very respectfully yours,  
EDWARD ORTON, *President.*

OHIO STATE UNIVERSITY, *November 6, 1878.*



## DEPARTMENT REPORTS.

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### CHEMISTRY.

EDWARD ORTON, *Ph.D., President Ohio State University:*

DEAR SIR: I have the honor to present this, my sixth annual report of the Chemical Department.

The number of students enrolled during the past year in the class of General Chemistry was sixty-three. Of these, forty-one remained until the close of the year. The class begins this present year with an enrollment of sixty-four.

The number of students in Analytical Chemistry during the past year was seventeen. This year there are twenty-four students in Analytical Chemistry. Of these, eight are in Quantitative and sixteen in Qualitative Analysis. The course of study in General Chemistry taken by the last class extended through the entire year, with a weekly average of more than four and one-half recitations. Owing to a change in the required course of study, the present class will have daily recitations extending through the first two terms of the year, or for twenty-six weeks. By reason of this change in the time assigned to General Chemistry, I shall be compelled to omit some of the details heretofore presented, but shall endeavor to give the class a well-ordered outline of the science. I shall follow, as far as possible, the mode of teaching described in my fourth annual report.

The course of study in Analytical Chemistry extends, for each student, over two years' time, in which he is expected to average two and one-half hours' daily work. Each student works independently, and advances in his study as fast as his ability and his diligence warrant. After the first few weeks of the year there are almost as many classes in the laboratory as there are students, but I find it profitable to them, as well as convenient to myself, to have them work as far as possible in small groups.

This year we have our largest number in Quantitative Chemistry. Our equipment is just about sufficient for the class. With a larger class, such as I may expect the third term of this year, we shall need a larger drying apparatus, and at least two more balances.

I also recommend that two more desks be ordered in readiness for the third term. With these the west wing will have its full complement, and will then accommodate thirty-two students.

Provision is being made for the better ventilation of the laboratory, and for a "poison hood." This is a much needed improvement, and will be every way a gain to the University.

During the past year the progress made by the students in the department was, on the whole, satisfactory. Very many of the class in General Chemistry acquitted themselves with high credit, and the entire class are deserving praise for diligence and universal good behavior. The work done by the Qualitative students is also commended; but I am not fully satisfied with the work accomplished by most of the Quantitative students. The present class start out with fairer auspices, and will probably accomplish more during the year.

Two of the last year's students have returned to the laboratory in order to engage in original research. I have hopes that they may add something to our knowledge of fire-clays and cements. Mr. Howard, of the first graduating class, chose for his thesis "The Iron Ores of the Hocking Valley." An abstract of it is printed with the annual report of the University.

With great respect,

SIDNEY A. NORTON.

*Professor of Chemistry.*

NOVEMBER 5, 1878.

## ENGLISH AND MODERN LANGUAGES.

*President* EDWARD ORTON:

MY DEAR SIR: I respectfully submit the following brief annual report upon the department of English and Modern Languages.

There are seven classes, each having a daily exercise of one hour each. The class in English of the required course has 33 members; the two classes in the School of English have 42 members; the two classes in German have 32 members; the two classes in French have 14 members, an exceptionally small number—total in the seven classes of the department, 121. Various students, however, are here for the prosecution of the studies of this department mainly or exclusively, and so are in two or more of these classes; hence the number of *different students* in the department is 112, being fifty-eight per cent. of our total number of students.

A comparison of my class lists with those of Prof. Smith, of the department of Latin and Greek, shows that over 140 of our students—nearly seventy-five per cent. of the whole number—are pursuing at least



one, and over 40 are pursuing more than one of the linguistic and literary studies provided for in our curriculum. This fact is significant as to the needs to be met even in a college in which the sciences are made prominent, and more than justifies the Board in what it is doing to meet these requirements.

Besides our exceptionally full courses in the modern languages, in English Philology, in the History of Literature, in Rhetoric and in Logic, all save our youngest students take part, in due turn, in weekly public rhetorical exercises; these consist of original essays and orations. The revision and production of these is committed to me—the strictly elocutionary teaching of the College being in the competent hands of Lieutenant Lomia.

I am ably assisted by Miss Alice Williams, now in the third year of her service of the University.

Along with the hearing of strictly text-book recitations, go daily oral explanations and applications of the lessons, and courses of more formal lectures upon the several studies of the department. For the theory upon which the several parts of the work of the department are organized and conducted, I refer to the full statement of my report for 1876.

The Board's appropriation of \$100 is gratefully acknowledged, but will go but a little way towards even an approximation to an adequate equipment of a department covering so great a range of studies, of studies so essential to a thorough education for any walk of life, and pursued by so many of our students. I earnestly commend the matter to the attention of the Board, with the hope that this department may soon be furnished with helps and facilities relatively equal to those of the several departments of science.

The department is in good order, and I owe my students this public mention of their diligence and good progress.

With great respect, yours,

JOSEPH MILLIKIN,  
*Prof. Eng. and Modern Languages.*

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## BOTANY, AGRICULTURE, AND VETERINARY MEDICINE.

*President* ORTON:

DEAR SIR: The studies pursued during the past year by classes under my instruction were Structural and Systematic Botany of the required course, Systematic and Economic Botany of the first college year, and first and second years, Agriculture.

Botany of the required course occupied the third term of the year, with recitations daily. The class numbered sixty-five, and was therefore

divided into two sections, which recited in successive hours. By a change made last year, the Botany of the required course was limited to a single term; this enabled the class to finish structural Botany and to begin systematic. A college class of four continued Botany through the year. A class of three is now pursuing the same study. No provision, other than the appointment of a teacher, has yet been made by the University for instruction in Botany. It was made the duty of the Professor of Agriculture to give instruction in this science, and so far he has depended entirely upon the wild flora of the surrounding country for his means of illustration. In making collections for the class in Systematic Botany, not unfrequently every available hour of daylight has been occupied. The employment of a gardener and the erection of a suitable greenhouse, with the assignment of a plat for a botanic garden, would give to this important branch of natural history a rank to which it is justly entitled. A good garden so near a large and rapidly growing city ought to pay expenses from the sale of its products.

First Year Agriculture was studied through the year by a class of ten, which, to accommodate other recitations, was divided in two sections. The subjects which occupied the attention of this class were the origin, composition, and classification of soils, value of different manures and fertilizers, crops, tillage, farm improvement and management. So far as they found time, these students were given employment upon the farm, and received compensation for their services. A class of six is engaged with the same studies the present term.

During the year several experiments were made, under my direction, by Mr. Thorne, Farm Superintendent. These were intended to aid in determining the value of corn for fattening in the cooked, ground, and raw state; to determine the value of the tillage of the growing wheat crop, and the effect of different rates of seeding; the effect of deep plowing and subsoiling, and the value of different manures and fertilizers on meadow, on root crops, and upon corn. An account of these experiments in detail, furnished by Mr. Thorne, is herewith transmitted. It is due to Mr. Thorne that I express my high appreciation of the intelligence and care with which these numerous details were collected and recorded.

The Second Year Agriculture was pursued through the year by a class of eight, which also recited in two sections. The first term was occupied with the varieties of domestic animals, their special adaptations, and their management in health. The second term was spent in obtaining a knowledge of the general principles of disease and of treatment. The third term was devoted to the study of particular diseases. Three students are engaged on the same studies the present term. These

veterinary studies would be greatly assisted if the University possessed a good pathological cabinet. An appropriation for this object was made two years since, but owing to the difficulty of obtaining at that time the articles most desired, nothing was secured. Should the Farmers' Lecture Course be opened in January, as now seems probable, such a cabinet will be more than ever desirable.

From the tenor of many recent articles in the public prints, and the frequency of personal inquiry, it would seem that the farmers of the State are becoming more and more convinced of the need of veterinary science. From assessors' returns to the Auditor of State we learn that stock-owners of Ohio in 1877 lost from the death of animals resulting from disease the sum of \$2,511,049, or about three and one-third per cent. of the total stock valuation.

In addition to experiments already mentioned, a series of microscopic examinations were made on the University farm upon the ripening of wheat. From the middle of June until the 8th of July examinations were made daily, with a view to determine whether the starch and gluten of the wheat kernel are deposited simultaneously or in some degree consecutively. The result showed that the full complement of starch is deposited some days before the gluten cells are filled, and consequently that it is possible to cut wheat so early as to deprive the crop of the larger part of its gluten. When cut thus early the kernels are plumper than when more fully ripe, owing to the amount of moisture contained in the starch, and possibly the flour made from such early-cut wheat is whiter, for starch makes a whiter flour than gluten. It should be understood, however, that the market value of flour, other things being equal, is in proportion to the amount of gluten it contains. If future examinations of different varieties of wheat, and in different seasons, confirm these results, it will be possible for Ohio farmers, by cutting their wheat as late as is compatible with harvesting without waste, to bring the quality and price of Ohio flour more nearly to that of Minnesota, and annually add millions of dollars to the value of the wheat crop.

Yours respectfully,

N. S. TOWNSHEND.

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## DEPARTMENT OF MATHEMATICS AND CIVIL ENGINEERING.

EDWARD ORTON, *President*:

SIR: The following sketch gives a general outline of the work done in the department of Mathematics and Civil Engineering from November 1, 1877, to October 31, 1878, both inclusive. This time, embracing, as it

does, parts of two academic years, includes all the classes for one year and part of those for another. The course of study laid down in the catalogue is closely adhered to, and for this reason a bare reference to that course is deemed sufficient.

The number of students in algebra was 81; geometry, 72; surveying, 41; trigonometry, 34; in the various parts of civil engineering, 34; descriptive geometry, 27; astronomy, 28—a total of 317. But since many of these recited in more than one class, the number of different persons was only 168.

The classes in surveying and kindred subjects were divided into sections of three or four students each, and each section took field exercises twice a week throughout the fall and the spring sessions, unless prevented by unfavorable weather or other sufficient cause. These exercises consisted in taking levels, measuring heights of accessible and inaccessible objects, distances of or between near or remote objects, surveying fields or the farm, measuring irregular outlines by means of offsets, setting out curves by various processes, and, finally, laying out a short line of imaginary railway, and making all the measurements for level, cross-section, slope, contour, abutments of bridges, and culverts, and estimating the amount of earthwork and probable cost, and making appropriate drawings of it all.

In the winter session, when field work would ordinarily be impracticable, the students were instructed in the various kinds of drawing pertaining to the work of engineers, viz., ordinary platting, topographic, isometric, and axionometric work, shades and shadows, and the general principles of perspective.

The number of my daily recitations is usually four, of one hour each; from one to two hours a day are also required to oversee and manage the field work and the papers growing out of such work, or for regular instruction in the various kinds of drawing executed by the pupils. Besides, there is almost always some one who needs extra aid to bring him up to the proper standard, or to keep him there; and if good fortune smiles a little, and no further aid is needed, generally two or three more are ready to take his place. Half an hour a day, at least, is required for this work. It will be only a fair statement to say that all the time from eight in the morning till five in the afternoon is given up to the work of the College; also about half the Saturdays, and many evenings in the year. No recitation has been lost or any other duty omitted within the year, or at any time since the College opened in 1873.

R. W. MCFARLAND.

## ZOOLOGY.

OHIO STATE UNIVERSITY,  
COLUMBUS, OHIO, *November 1, 1878.*

EDWARD ORTON, PH. D., *President* :

DEAR SIR—I have the honor to submit the following report of the condition and work of the department of Zoölogy and Comparative Anatomy.

The equipment of the department has been increased during the past year by the purchase of an extensive series of specimens of the native birds of Ohio, prepared and mounted by Mr. Davie, the taxidermist, of this city. No other additions of importance have been made.

In this connection I would again express my earnest hope that at an early day the Trustees of the University will provide for the purchase of at least a few pieces of apparatus, for practical instruction in and laboratory study of Physiology. This alone, of all the branches of Natural Science taught in the University, is studied from books only, at present. The outlay of a few hundred dollars would enable the students of Physiology to derive a large share of their knowledge from nature, instead of receiving it all at second-hand, as now; and the increased value of such knowledge, not only to those who have the lives of their fellow-men in their keeping, but also to those who have to do with the breeding and care of our domestic animals, would more than repay the expense.

And this brings me to the mention of a want that is still more pressing, viz., that of a current expense fund, raised either by an appropriation or by a small laboratory fee, to be so applied as to meet the running expenses of the department. By referring to the exhibit below, it will be seen that the number of students in the higher classes in this department is rapidly increasing, and the increased amount of material to be provided can no longer be trusted to a chance supply. A score of students expect to enter the dissecting-room this winter: at least half a dozen animals a week must be furnished them during the greater part of next term, if they are to have the means of getting even an elementary knowledge of the structure of the domestic animals and their nearest allies, in the only way in which real knowledge may be obtained. It may be possible to teach Physiology in an efficient manner from books alone, if a good foundation has been laid in a practical knowledge of Anatomy; but where the foundation is defective, what can be expected of the superstructure? I trust that you will see the importance of bringing this matter to the attention of the Trustees in such way as to insure some definite action.

But little remains to be said concerning the work of the department, since little change has been made since last year. Cleland's excellent text-book continues in use in the class in Elementary Physiology; Orton's Zoölogy has been used during the past year by the elementary class, with indifferent success; Foster's Text-Book of Physiology comes as near meeting the wants of our advanced classes as any text-book alone can do; in Comparative Anatomy, I have returned to Mivart's Lessons, after a year's experience with Huxley's Manual; the advanced students in Zoölogy use no text-books whatever, laboratory work being supplemented by lectures throughout the year.

The number of students in this department during the past year, and the classes, are as follows: During the winter and spring terms of last year, Elementary Zoölogy, sixty-six; advanced Physiology (and Histology,) six; a special class that read Human Anatomy with me, two; Veterinary Anatomy, one. During the fall term of this year, Elementary Physiology, forty-nine; Comparative Anatomy, twenty; advanced Zoölogy, five; making a total enrollment of one hundred and forty-nine. Deducting eighteen who were enrolled in more than one class, the number of students working in the department for the year is one hundred and thirty-one.

Accompanying this, I present a detailed statement of the present equipment of the department, in accordance with the request of the Board of Trustees.

All of which is respectfully submitted.

ALBERT H. TUTTLE, *Professor.*

## MILITARY SCIENCE AND TACTICS.

OHIO STATE UNIVERSITY,  
COLUMBUS, OHIO, *November 5th, 1878.*

EDWARD ORTON, *Ph.D., President Ohio State University:*

SIR: I have the honor to make the following report of the departments under my charge:

### I. MILITARY SCIENCE AND TACTICS.

The law of optional drill has given me eighty-two (82) members, which is about fifty (50) per cent. of the male students in attendance at the University. This number is organized into two companies. At present the new students are being instructed in the squad and company drills, while the old cadets are exercised in artillery drill, in target practice,



and in the duties pertaining to sentinels on post. In due time skirmish and battalion drills, bayonet exercise and ceremonies will be taught as heretofore.

The strict but just regulations which the Board of Trustees have made regarding the military department, have already been productive of the greatest good, bringing to the ranks, the more cheerfully, young men of whom the University will yet be proud.

Nevertheless, the State law making the drill optional is much to be deplored, and I earnestly hope that military training may again become obligatory upon all the students as formerly.

Theoretical instruction in the military department is given, as usual, in two classes. During the first year, Tactics and Army Regulations are taught, lectures being given to the advanced class on Field Engineering, Military Law, International Law, Military History (illustrating strategic principles), and the Science of Artillery. In the preparatory class there are twenty-five (25) students, and in the advanced class there are six (6). A drill hall for inclement weather is very much needed.

## II. MATHEMATICS.

The share of my work in this department includes Analytical Geometry of two and three dimensions, the Differential and Integral Calculus, and Plane and Spherical Trigonometry. This last subject being placed in the last term of the academic year, I have opened for the present with eight (8) students, who have taken up Analytical Geometry. This class makes daily recitations, and it will go through the study of the Calculus by the end of the present University year.

## III. ELOCUTION.

Two hours a week are devoted to this study. The class at present numbers twenty (20) members, and is constantly increasing. As there has been found no University hour suitable for the majority of the class, the plan has been adopted of giving half hour rehearsals to students individually, at such times as are found convenient in each case. The members of the class, however, are called together to declaim the rehearsed pieces as often as practicable.

If I may be permitted, I would respectfully suggest that this instruction be made available only to the three higher classes of the University. In this way students in the advanced classes would receive more frequent individual training than by the present plan—a thing which might be desirable.

In conclusion, I would urge most strongly that two prizes in money, or in anything else, be offered by the Board of Trustees, one to the best declaimer of prose, and the other to the best declaimer of poetry, the awarding of the prizes to take place under the control of the University Faculty.

I am, sir, very respectfully, your obedient servant,

LUIGI LOMIA,

*U. S. A., Professor of Military Science and Tactics and adjunct Professor of Mathematics.*

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## MINING ENGINEERING AND METALLURGY.

EDWARD ORTON, PH. D., *President*:

SIR: I herewith submit my first annual report.

The establishment of the department of Mining Engineering was so much delayed by the sudden death of Prof. Newton, who was the first appointment to this chair, and by my own engagements in the field, that no beginning was made until the end of the first term. Three students entered, but one was induced to abandon the study by the offer of employment in his profession as civil engineer, and instruction was continued with only two in the full course, and one other who entered for a special course in mineralogy.

The chemical laboratory required by the State law was put in operation, and during the remaining two terms eighty-six analyses and assays were made and reported to parties sending in the samples. Seven analyses were uncompleted at the end of the academic year, the material not being received in time. In the work of analysis I was efficiently assisted by Mr. C. C. Howard, a member of the graduating class.

That assistance has failed me this year, and in spite of the fact that I am occupied four and a half hours daily with lecture and other educational work, and shall have five and a half hours during the third term, I have been obliged to give constant attention to analytical work for the State. Nine analyses have been made, and about thirty others are awaiting their turn. The material already received is more than I can possibly finish during the whole year.

Under these circumstances, I respectfully request the Board to appoint an assistant to carry out this work under my supervision. There is no other way of complying with the law which allows the residents of Ohio to send in material without limit, for analysis *gratis*.



The work of analysis has not been the only mode in which the laboratory under my charge has served the State. During the winter I was called upon by committees of the Senate and House to report upon the oils sold for illuminating purposes, and also to determine the limits of safety and to supply a proper test to be enforced by law. Examination of the illuminating oils then in the market, showed that they were very unsafe, and a law was passed imposing a flash test of 120° Fahrenheit, made according to a method furnished by me.

From the appropriation made by the Legislature for the department of Mines, Mining, and Metallurgy, I received \$2,736.51, which was expended as follows for the double purpose of establishing a State laboratory and providing the means for educational work:

## FOR THE STATE LABORATORY.

1. Fixtures.....	\$324 29	
2. Supplies.....	1,456 38	
	<hr/>	\$1,780 67

## FOR EDUCATIONAL PURPOSES.

1. Assaying apparatus and ores.....	\$326 43	
2. Mineralogy .....	589 14	
3. Books and freight.....	40 27	
	<hr/>	955 84
		<hr/>
		\$2,736 51

From the appropriation for 1878-9, there has been expended—

For minerals.....	\$46 50
“ drawing materials.....	85 02
“ laboratory supplies (uncompleted).....	5 15
	<hr/>
	\$137 67

The educational apparatus has, therefore, cost about one thousand dollars, and includes a student's collection of minerals, which, though not large, contains nearly every species with which the mining engineer needs to become familiar, and the instruction given by its aid has been quite satisfactory. For assaying, the equipment is very thorough, and will afford students an opportunity of obtaining a practical knowledge of this art, which is of especial value, since it is one of the most frequent means of obtaining employment. Though the materials are mostly destroyed in the act of making assays, the supplies are sufficient to keep this branch of the department in active operation for some years with only insignificant additions.

With the small appropriation granted by the State, I was not able to make any provision of drawings or models for mining or metallurgy, but

have furnished the students with some material from my own collection. From the same source I have been able to make use of a valuable series of ore-dressing products obtained in the copper and zinc industries.

The department now gives thorough instruction in Mining and Metallurgy on a scale which is not surpassed by any mining school in America. All the courses are maintained with thoroughness, and the slurring over of important subjects, which is sometimes caused by lack of time, is not permitted here, where the length of our course allows the student full time for his work. As now organized, the course in Mining Engineering requires four years study, and is conducted by six professors, three of whom teach the general subjects of geology, chemistry, and German, and three others teach civil, mechanical, and mining engineering. Mathematics, drawing, and physics are either incorporated into these courses, or required of the student before entrance.

Three and a half hours daily for two years are spent in the special mining studies—a time which is sufficient for extended instruction in metallurgy, mining, ore-dressing, assaying, and the theory of mineral deposits. The mode of instruction is by lectures, fortified by text-books wherever possible.

In addition to the special work of my department, I have undertaken to give a course in Mineralogy to the second year preparatory students. That class will number about forty members.

In the Mining Department there are now five students, two in the first, and three in the second year studies.

As now organized, the two years' course is divided as follows:

First year—Mineralogy, Mining, Ore and Coal Washing, and Assaying.

Second year—Metallurgy, Drawing, and Mine Sections.

Respectfully submitted,

JOHN A. CHURCH,  
*Professor of Mining and Metallurgy.*

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## PHYSICS AND MECHANICS.

OHIO STATE UNIVERSITY,  
COLUMBUS, *November 2, 1878.*

EDWARD ORTON, *President of the University:*

DEAR SIR: Brevity might naturally be expected of this, my first report, from the fact that my whole term of service here is included within two months. Indeed, it might be so, were it not desirable that a proposed plan for some parts of my future work be presented.

The number of students in classes under my charge is sixty-nine, distributed as follows: Elementary Physics, forty-six; Physical Laboratory, ten; Mechanical Laboratory, ten; Mechanism, 3. Four students, however, are in two classes, making the whole number of persons sixty-five.

#### PHYSICS.

Instruction in this subject has been given as heretofore, partly by use of a text-book and partly by lecture, for the elementary class; and for the advanced class mostly by the actual use of the instruments by the individuals of the class, each student's own data being reduced by him to the final results by computation.

It is believed that for the best interests of the elementary class a somewhat more elementary text-book should be used, and that the class be held during the second and third term of the year, instead of the first and second. Both of these would improve the student's chances for comprehending the subject, which, as at present, seem somewhat against him. If, then, the student begins his higher work in the fall term by the use of a higher text-book, accompanied by lectures on the more difficult topics, and in the winter begins his physical laboratory practice, the student's work in physics is not only continuous, but progressive, from the lower to the higher, without the intermission of a term. This arrangement would also admit of one recitation per day only, in physics, when otherwise there would be two part of the time, and none the rest.

Much credit is due Mr. Sidney H. Short for valuable aid in the Physical Laboratory, without which it would be exceedingly difficult, if not impossible, to do justice to all the classes in consequence of the extra work now demanded in mechanics. The difficulty would, however, be greatly relieved if the laboratory exercises could be so provided for as to allow the students of each laboratory to all come at once.

#### MECHANICS, OR MECHANICAL ENGINEERING.

Instruction can now be given in most of the branches which qualify the student for the degree of Mechanical Engineer. The only lack is in the Mechanical Laboratory facilities. Though it is contended by some that practical instruction in mechanic art is not properly part of the work of colleges, yet it is held by others, on a much more rational basis, to be such. Those who oppose would have the young man get his practice at an apprenticeship. But there is one objection to this, and one great difficulty in the way of it. The objection lies in the waste of

time—four years at an apprenticeship and four years in college make a term of eight years of study, which is too slow for the rate of progress of to-day; especially so, when the same, if not even more, can be done in the one term of four years while at college by collocating the instruction in practice and principles. And why should not instruction in mechanical engineering have its proper aid from a laboratory as well as other branches of education? The difficulty named lies in the fact that the apprenticeship system is a thing of the past, it having been killed by the modern methods of manufacture. The great factories of to-day non-plus individual production, and form centers where machines take the place of skill. Accomplished foremen and superintendents are, however, still needed at these mechanic art headquarters, whose responsibilities expand with the capacity for production. These the colleges and universities of the land must produce, and in these colleges practical instruction must find an asylum where trades unions and mob rule can not molest it.

The instruction in mechanic art which, it is believed, should be provided for at this University, by fitting up the Mechanical Laboratory, may be indicated thus: It should extend at least through four terms, or one and a third years, one exercise per day. Two years would be still better.

The first term should consist of laboratory exercises in elementary practice four times a week, with one lecture per week on tools and their use, and methods of practice. This practice would be elementary, because confined to single pieces, and not including the fitting of parts together. Also, the practice should be guided by the eye, and not by hand tools of precision, such as the square, rule, callipers, etc. The eye needs its training as well as the hand. This practice should be made up of lessons in wood work preparatory to pattern making, in moulding and casting of brass, in the elementary operations of forging, such as lengthening, shortening, bending, welding, etc., in the elementary operations of the fitter's bench, such as chipping, filing, finishing, etc.

In the second term the above operations may be carried on to more complex pieces or forms, with the addition of machine tool work in elementary practice, such as preparatory turning, boring, planing, milling, drilling, etc., of iron. Hand turning should be included.

In connection with this practice, one exercise per week should be devoted to the designing and drawing of machine elements, such as cranks, bearing-boxes, stuffing-boxes, stub-ends, pistons, etc.

In the third term, the practice should be extended to the fitting of parts together in pairs, such as chipping grooves and filing pieces to fit, planing grooves, and pieces to fit; boring holes, and turning pieces to fit;

ting wood and wood, wood and iron, etc.; also, the surfaces of pieces should e finished or polished by use of emery, burnishers, etc. The student should lso be familiarized with the use of the scraper in making perfect joints.

In connection with this third term's work, there should be one exer- ise per week at inventing and drawing of simple machines, for doing uch acts as bending wire into staples, cutting out wooden combs, turn- ng handles, etc.

The fourth term should either follow or be in connection with the tudy of mechanism, so that problems in mechanism can be worked out, nd the parts constituting the movement, and its frame-work or supports, ade in the laboratory. This would be construction, the results being odelsof mechanical movements suitable for the cabinet of models. In his way the cabinet may be constantly increased. In the terms preced- ng this we have instructive practice, while in this, constructive practice, n which we have application of the skill acquired in the earlier practice.

The remaining technical studies are such as the strength of ma- terials, thermodynamics, machinery and mill-work, prime movers, ma- hine designing and drawing, etc., which will be provided for by lec- ures, for the most part, as classes mature for them.

The course, as above outlined, indicates that our present pressing need s for machine-tools, and power for the further equipment of the mechani- al laboratory. These are seen to be needed within the next term or vinter term, and as the procuring and installing of them is a matter of ome considerable time, provision should, if possible, be made for it at nce. The things needed are a steam engine of eight-horse power, shaft- ng, with its pulleys, belting, and hangers, two engine-lathes, two hand- athes, one planer, one milling-machine, one drilling-machine, one shap- ng-machine, one grindstone for power, and one blower for forges. The orices have not been obtained, exactly, but would be about as below :

Two engine-lathes.....	\$1,000 00
Two hand-lathes .....	200 00
Planer .....	500 00
Milling-machine.....	700 00
Drilling-machine.....	200 00
Shaping-machine.....	500 00
Fan.....	50 00
Grindstone and stand.....	25 00
Shafting and pulleys .....	200 00
Engine, boiler, pumps, etc.....	1,000 00
Gear cutting machine.....	500 00
Setting up and materials.....	500 00
Total .....	<u>\$5,375 00</u>

Unless it be considered safe and advisable to carry steam at twenty pounds pressure on the present boilers, a separate boiler would be necessary, which would cost in the neighborhood of \$200. At present, the engine could be run from the large boilers.

The appropriation of \$600, allowed at the beginning of the term, has been nearly all consumed in putting the laboratory in its present shape. Pains have been taken not only to procure good articles, but to provide for their preservation, and to make the laboratory attractive and inviting.

One of the rooms of the first story has been fitted up with a cabinet case, a few models and blackboards, giving us a room suitable for the lectures, and other higher work of the mechanical branches.

Very respectfully yours,

S. W. ROBINSON.

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### LATIN AND GREEK.

EDWARD ORTON, *Ph.D., President* :

DEAR SIR: I have the honor to transmit my third annual report for the department of Ancient Languages. The history of the past year presents a record of faithful attendance and successful work for nearly all the students under my charge. The good effects of the preparatory department, established last year, are already seen in the increased interest manifested by new students in the subjects of Latin and Greek, and a corresponding increase in the number electing those studies. The number of different students engaged in studying Latin or Greek, or both, as well as the aggregate membership of the classes, is about double that of last year, in spite of the fact that the total number of students in the University is no larger than last year. This certainly is a significant fact, and one thing which it signifies is, that the young men and women who come to us each autumn recognize the high value of the study of ancient languages as an educational factor, and will meet with eager demand all that is put forth in the way of supply.

The department needs what has been spoken of in previous reports, together with additional facilities for the preparatory classes. It now consists of the regular college classes in Latin and Greek, four in number, taught by myself; and three elementary classes, two in Latin and one in Greek, all three taught by Mr. Cunningham, who is doing excellent work with them. As stated in the outline of our work (for which

see "Courses of Study" in this report), the preparatory work laid out takes the student from the beginning up to the course of regular college work. It thus is analogous to, and virtually a part of, our regular required course.

I present the following tabular statement of the number in my department, comparing it with my last year's report, in order to exhibit the ratio of increase.

	Last year.	This year.
Number of different students in the department .....	28	57
Total class membership in department.....	39	74
	=====	=====

COLLEGE CLASSES.

<i>Latin.</i>		
First Year Class.....	7	13
Second Year Class.....	1	4
<i>Greek.</i>		
First Year Class.....	4	5
Second Year Class.....	2	2
<i>Elementary Latin.</i>		
First Year Class.....	17	31
Second Year Class.....	8	15
Elementary Greek.....	....	4
Total .....	30	74

The regular class-room work is supplemented by lectures given throughout the year on the subjects studied, and its results are tested by the regular term examinations, as well as by examinations held during the course of last term. During the past year the scheme indicated in the course of study for this department has been adhered to, with one or two trifling modifications.

Very respectfully,  
J. R. SMITH,  
*Assistant Professor of Latin and Greek.*

MECHANICAL AND FREE-HAND DRAWING.

COLUMBUS, OHIO, *November 4, 1878.*

EDWARD ORTON, *Ph.D., President:*

DEAR SIR: I submit the following report of Department of Drawing, under my care:

The attendance has been good during the past year. One hundred and eighty-one (181) students have received tuition in the usual branches of



Mechanical and Free-Hand Drawing, embracing drawing from the flat, from plaster casts, in stump and neutral tint, laying on flat tints and lettering, architectural drawing, botanical drawing from nature, illuminating, lithographic drawing, printing and print coloring, also photography.

I have executed diagrams in oil paint for departments of Military Science and Physics, and lettering for the University and Farm.

Diagrams in Lithography have been drawn and printed by students for departments of Chemistry, Geology, and Physics.

I have much pleasure in stating that the diligence and improvement of the students in their work is very satisfactory.

At present about two-thirds of the young ladies of the institution spend more or less time in this department.

Many who are preparing themselves for teaching are anxious to devote as much time as possible to picture writing, which, though one of the oldest, is still one of the most valuable for conveying ideas.

Our range of instruction in the department taking in many forms of picture making, must greatly aid in the formation of a good judgment.

A taste for art is an acquired one, and a standard of excellence can only be reached by familiarity with the acknowledged masterpieces of art production, either by plaster casts or copies from paintings by the usual methods of reproduction. We ought to have these aids to improvement for the students. Nothing is equal to drawing for giving the finger-wisdom necessary to some professions, and indispensable to every skilled workman.

I beg to repeat my application for more advanced flat studies, landscape and figures, more lithographic stones, and greater facilities for photography.

With great respect,

THOMAS MATHEW.



# CIRCULAR AND CATALOGUE.

## FACULTY.

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EDWARD ORTON, PH.D.,  
*President, and Professor of Geology.*

SIDNEY A. NORTON, PH.D., M.D.,  
*Professor of General and Applied Chemistry.*

JOSEPH MILLIKIN, A.M.,  
*Professor of the English Language and Literature, and of the French and German Languages.*

NORTON S. TOWNSHEND, M.D.,  
*Professor of Agriculture.*

R. W. MCFARLAND, A.M.,  
*Professor of Mathematics and Civil Engineering.*

ALBERT H. TUTTLE, M.Sc.,  
*Professor of Zoölogy and Comparative Anatomy.*

LUIGI LOMIA, M.Sc.,  
First Lieut. Fifth Artillery, U. S. A.,  
*Professor of Military Science and Tactics, and Adjunct Professor of Mathematics.*

S. W. ROBINSON, C.E.,  
*Professor of Physics and Mechanics.*

JOHN A. CHURCH, M.E.,  
*Professor of Mining and Metallurgy.*

JOSIAH R. SMITH, A.B.,  
*Assistant Professor of the Latin and Greek Languages.*

THOMAS MATHEW,  
*Instructor in Free-hand and Mechanical Drawing.*

ALICE WILLIAMS,  
*Assistant in Department of Modern Languages.*

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N. W. LORD, M.E., *Assistant in State Laboratory.*

JOSIAH R. SMITH, A.B., *Librarian.*

MARY F. MORRISON, *Assistant Librarian.*

## ORGANIZATION AND EQUIPMENT.

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The Ohio State University is founded on the Congressional land grant of July, 1862. By that act a large amount of the public land was turned over to the several States, the proceeds of the sales to be devoted to the better education of the industrial classes. The share of each State was proportioned to its representation in the National Legislature, and thus six hundred and thirty thousand acres came into the possession of Ohio. This munificent gift was unfortunately pressed for sale upon a temporarily overstocked market, and the State realized only fifty-four cents to the acre. The total amount of the sales (\$342,450) was, however, put at interest, and when the institution was opened, in September, 1873, the principal and interest together constituted a productive fund of something over \$500,000, the annual income from which slightly exceeds \$30,000.

The Legislature having passed an act to authorize the several counties of the State to raise money to secure the location of the University, an offer of \$300,000 from Franklin county was accepted by the Board of Trustees, and the University was permanently located at Columbus. The money furnished by Franklin county has been mainly expended in the three following items: 1. The purchase of a valuable farm of three hundred and twenty acres within the corporate limits of the city of Columbus. 2. The erection of a spacious and elegant college building and two dormitories for students. 3. The equipment of the various departments of instruction in the University.

The total value of endowment and property at the present time exceeds \$1,000,000.

The departments already established, and the provisions made for giving instruction in them, are as follows:

### I. PHYSICS.

For this subject ample provision has been made in the equipment of the institution. It is safe to say that, in the opportunities afforded for thorough study in it, the University already surpasses most of the institutions of the country. Its laboratory is supplied with expensive and well-selected apparatus, designed not only for illustration, but also for

original research in all the leading divisions of the science. Students are directed to its use in the way of original investigation as soon as they are properly prepared to undertake such work.

## II. CHEMISTRY.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy.

The course in Quantitative Chemistry includes both the volumetric and the gravimetric methods. The student will also be assisted in any special branch of the science that he may desire, and take up in detail topics which relate to pharmacy, medicine, agriculture, and other sciences in which the principles of chemistry are applied.

## III. ZOÖLOGY.

The subject of Zoölogy, as its growing importance well deserves, has been assigned to a distinct professorship, and means have been provided for making the instruction in this subject thorough, practical, and extensive. A large amount of material, selected with special reference to its availability in teaching, has already been accumulated.

A dissecting-room, with good facilities for the study of veterinary anatomy, is also furnished, while for practical training in microscopy there have been supplied eight microscope stands, representing all the principal modes of construction, and nineteen objectives, giving powers up to 2,500 diameters.

## IV. BOTANY.

Permanent provision has not yet been made for this subject, but the Professor of Agriculture will give instruction in it for the present. By the will of the late William S. Sullivant, Esq., the library of this distinguished botanist has come into possession of the University. It contains not only all of the standard treatises on the subject, but many rare and valuable works, as the *Icones Muscorum*, the *Flora Braziliensis*, etc, etc. An herbarium, representing quite completely the flora of Ohio, is accessible to the student.

## V. GEOLOGY.

The University is able to present unusual advantages for the study of Geology. By act of the Legislature it has been put in possession of all the collections made by the State Geological Survey during its five years of service, and these collections have been supplemented by valuable

additions of fossils and minerals from various sources. The State collection embraces a very complete representation of every geological formation shown in Ohio.

#### VI. AGRICULTURE.

The department of Agriculture, which also includes the *diseases of animals* and their *medical and surgical treatment*, is provided for in a distinct professorship, the aim of which is to acquaint the student with the theory and practice of a truly rational system in this most important field. The course extends through two years, and is rendered practical by being constantly connected with the work that is carried on upon the farm. Numerous opportunities are afforded to the students in veterinary medicine of observing the treatment of diseased animals.

#### VII. MATHEMATICS.

Under the two professorships that divide the work of Mathematics between them a full course of instruction is provided for, including also the subject of Astronomy. A term is given to Trigonometry, and one and a half terms are given to each of the two subjects, Analytical Geometry and Calculus. The work of several of the other departments, especially Civil Engineering, Physics and Mechanics, and Chemistry, require the constant and practical application of the knowledge acquired in mathematical study. A term is given to Astronomy, but no special facilities have thus far been furnished in this subject.

#### VIII. CIVIL ENGINEERING.

This course, which extends through two years, includes surveying, location and construction of roads and railroads, construction of bridges, strength of materials, geodesy, etc. The time of one professor is chiefly devoted to this department. Field work is extensive and varied, for the execution of which a full set of engineering instruments of the finest construction is provided.

#### IX. MINING ENGINEERING.

This department has now been in operation for a year, and classes are established in the several branches belonging to it. The mining of coal and the manufacture and working of iron are recognized as the leading subjects in it, but full courses of instruction are offered in general metallurgy. The department is well equipped, both for instruction and practical work.

**X. MECHANICAL ENGINEERING.**

The University is now able to offer excellent advantages in this important subject. A mechanical laboratory has been established and is in successful operation. The Russian system of hand-training has been introduced, which insures the imparting of a measure of practical skill, together with theoretical instruction.

**XI. ENGLISH, FRENCH, AND GERMAN LANGUAGES.**

In the organization of the University, special prominence is given to the modern languages. Some of the students who resort here will study no language but their own, and it is, therefore, imperative that the opportunities for training in English should be made ample, while all who expect to attain any good degree of proficiency in the natural sciences must certainly acquaint themselves with French and German.

The course of study in the English language and literature has been made especially complete—as full and thorough as any offered in the colleges of the country. Rhetorical training of all students in the regular courses is also included here.

French and German can be pursued in courses as extensive as the needs of the student may require.

**XII. LATIN AND GREEK LANGUAGES.**

Ample provision is also made for the study of the Latin and Greek languages, not only in compliance with those terms of the organic law of the University which forbid the exclusion of classical studies, and which declare one of the aims of the institution thus endowed to be “the liberal education of the industrial classes,” but also because of the great advantage which such study gives in acquiring a thorough knowledge of our own and other modern languages; and, in the last place, but not the least important, because of the relations which they bear to literary, historical, and scientific studies.

**XIII. MECHANICAL AND FREE-HAND DRAWING.**

Instruction in these subjects has been provided for in the University, and all needful facilities are furnished by which those who wish may acquire skill in the several departments of drawing.

Practical lithography and photography are also taught in this department, all the necessary apparatus being placed at the student's disposal.

**XIV. MILITARY SCIENCE AND TACTICS.**

In accordance with an act of Congress, an officer of the United States army has been detailed by the War Department to give instruction in the subjects named above. An extended course of lectures and recitations in Military Science is offered to such students as desire it—as is also thorough instruction in military drill.

# DEGREES AND COURSES OF STUDY.

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Five degrees are offered by the University—two general, viz., Bachelor of Arts (B.A.), and Bachelor of Science (B.S.); and three special, viz., Civil Engineer (C.E.), Mining Engineer (M.E.), and Mechanical Engineer (Mech. Eng.)

In addition to these degrees, certificates of work done in the several departments will be granted as hereafter stated.

## PRELIMINARY COURSE.

For students who desire to complete a full course of study, and to receive any of the degrees of the University, the following general scheme has been established. When admitted to the University, they shall enter upon a prescribed course of study, which occupies two years. The aim has been to furnish in this two-years' course as much valuable knowledge as possible, and at the same time to lay a proper foundation for subsequent study. This course is constituted as follows:

### FIRST YEAR..

First Term—Human Physiology, English Language, Algebra.

Second Term—Physical Geography, Zoölogy, Algebra.

Third Term—Systematic Botany, Geometry, United States History.

### SECOND YEAR.

First term—Physics, Chemistry, Geology.

Second Term—Physics, Chemistry, Geometry.

Third Term—General History, Mineralogy, Plane and Spherical Trigonometry.

It is believed that when the student has completed the above-named course, his judgment and taste will be so formed that he can decide intelligently upon the particular line in which his study shall henceforth lie. A large liberty is therefore accorded to him in his subsequent college work.

## ADVANCED COURSES.

The remaining studies of each department of the University, with the exception of Mathematics, Military Science and Drawing, are thrown into two years, courses of daily recitations, and six of these courses (or their equivalents) are necessary for graduation.

Furthermore, the departments of the University are divided into three schools, termed respectively—

I. *The School of Exact Sciences*, embracing Mathematics, Civil Engineering, Physics, Mechanical Engineering, Chemistry, Mining and Metallurgy.

II. *The School of Natural History*, embracing Botany, Zoölogy, Geology, and Agriculture.



III. *The School of Letters and Philosophy*, embracing the English Language and Literature, German Language and Literature, French Language and Literature, Latin Language and Literature, and Greek Language and Literature.

The only restriction upon the liberty of the student who seeks one of the general degrees, in the remainder of the courses, is that one of the six required courses shall be taken from each of the schools above named.

If he is a candidate for the degree of B.A., the remaining three courses shall be selected from the School of Letters.

If a candidate for the degree of B.S., he must make his selection of the three additional courses from the Schools of Natural History and Exact Sciences.

It will be understood that the different subjects named in the work of the several years, are those from which selection can be made according to the plan already given.

The order of studies for these degrees is shown in the appended schedules.

Credit for work done in the departments of Military Science and Drawing is given to the student in such school as the Faculty, upon consideration of the individual case, shall deem best.

1. *For the Degree of Bachelor of Arts.*

First Year.	1. English. 2. German. 3. French.	1. Latin. 2. Greek.	1. Mathematics. 2. Qualitative Chemistry. 3. Physics. 4. Civil Engineering. 5. Mining Engineering. 6. Mechanical Engineering.
Second Year.	1. English. 2. German. 3. French.	1. Latin. 2. Greek.	1. Quantitative Chemistry. 2. Physics. 3. Civil Engineering. 4. Metallurgy. 5. Mechanical Engineering.
Third Year.	Language.	Language.	1. Botany. 2. Geology. 3. Zoölogy. 4. Anatomy and Physiology. 5. Agriculture.
Fourth Year.	Language.	Language.	1. Botany. 2. Geology. 3. Zoölogy. 4. Anatomy and Physiology. 5. Agriculture.

2. *For the Degree of Bachelor of Science.*

First Year.	1. Qual. Chemistry. 2. Physics. 3. Mathematics.	1. Botany. 2. Geology. 3. Zoölogy. 4. Anatomy and Physiology. 5. Agriculture.	1. English. 2. Latin. 3. Greek. 4. German. 5. French.
Second Year.	1. Quant. Chemistry. 2. Physics.	1. Botany. 2. Geology. 3. Zoölogy. 4. Anatomy and Physiology. 5. Agriculture.	1. English. 2. Latin. 3. Greek. 4. German. 5. French.
Third Year.	1. Comp. Anatomy. 2. Agriculture. 3. Paleontology.	Natural History or Science.	1. Chemistry or Physics. 2. Civil Engineering. 3. Mining Engineering. 4. Mechanical Engineering.
Fourth Year.	1. Comp. Anatomy. 2. Agriculture. 3. Paleontology.	Natural History or Science.	1. Chemistry or Physics. 2. Civil Engineering. 3. Mining Engineering. 4. Mechanical Engineering.

One year in each of two courses may, with permission of the Faculty, be counted an equivalent for a two-years' course in one. Six of these courses will, with three daily recitations, occupy four years. If the number of daily recitations is increased, the time occupied for the completion of the work assigned will be correspondingly reduced.

*For the Degree of Civil Engineer.*

First Year.	Analytical Geometry. Calculus.	Geology.	French.
Second Year.	Mechanics.	Qualitative Chemistry.	French.
Third Year.	Civil Engineering.	Quantitative Chemistry.	Physics.
Fourth Year.	Civil Engineering.	Economic Geology.	Physics.

*For the Degree of Mining Engineer.*

<b>First Year.</b>	<b>Analytical Geometry and Calculus.</b>	<b>Qualitative Chemistry.</b>	<b>German.</b>
<b>Second Year.</b>	<b>Geology.</b>	<b>Quantitative Chemistry.</b>	<b>German.</b>
<b>Third Year.</b>	<b>Mechanical Engineering (Thermodynamics, Prime Movers, and Mill Work.)</b>	<b>Mining. Coal and Ore Washing. Theory of Veins.</b>	<b>Mineralogy. Assaying. Drawing.</b>
<b>Fourth Year.</b>	<b>Civil Engineering.</b>	<b>Metallurgy of Iron and Steel. Metallurgy of Copper, etc.</b>	<b>Mining Labor- atory Project.</b>

*For the Degree of Mechanical Engineer.*

<b>First Year.</b>	<b>Analytical Geometry. " " " Calculus.</b>	<b>Free Hand Drawing. Descriptive Geometry. Projection Drawing.</b>	<b>French.</b>
<b>Second Year.</b>	<b>Mechanical Laboratory.</b>	<b>Metallurgy.</b>	<b>French.</b>
<b>Third Year.</b>	<b>Mechanical Laboratory. Mechanics.</b>	<b>Physics.</b>	<b>Rhetoric and Logic.</b>
<b>Fourth Year.</b>	<b>Thermodynamics. Prime Movers. Mill Work.</b>	<b>Strength of Materials. Drawing.</b>	<b>Geology.</b>

A student who has taken a degree, can take any other, by completing the additional work required for such degree.

The range of instruction proposed in the several departments can be learned from the appended statements :

**THE SCHOOL OF EXACT SCIENCES.****MATHEMATICS.****ONE YEAR.**

**First Term—Analytical Geometry of two dimensions.**

**Second Term—Analytical Geometry of three dimensions ; Differential Calculus.**

**Third Term—Integral Calculus.**

## CIVIL ENGINEERING.

## FIRST YEAR.

First Term—Surveying, Navigation.

Second Term—Descriptive Geometry, Isometric Drawing, etc.

Third Term—Astronomy, Shades, Shadows, and Perspective.

## SECOND YEAR.

First Term—Locating and Constructing Roads, Railroads, etc.

Second Term—Mahan's Civil Engineering, Strength of Materials, etc., Geodesy.

Third Term—Bridges and Bridge-Drawing, Stone-Cutting, Walls, Arches, etc.

*Text-Books.*—The works of Loomis on Algebra, Geometry, and Astronomy. In parts of the course, works by Davies, Warren, Church, Gillespie, Mahan, Haupt, Worthen, and others.

The parts of Chemistry, Physics, and Geology especially pertaining to Civil Engineering are studied under the direction of the professors in those departments.

In addition to the use and study of the text-books, the students are taught and practiced in the use of various astronomical and engineering instruments—the level, the transit, the plane-table, the sextant, the globes. They have practical field-work throughout the year, excepting only when the inclemency of the weather does not admit of it. The work consists in taking difference of level, running lines, measuring horizontal and vertical angles, determining the variation of the magnetic needle, finding the latitude by the pole-star and by meridian altitudes of the same; in fine, every variety of appropriate work which can be executed, is regularly, systematically, and thoroughly done.

## PHYSICS.

The full course in Physics is completed in two years. It embraces three kinds of exercises, as follows:

First—Recitations in which a text book is used as a guide.

Second—Illustrated lectures, consisting of experiments exhibiting the phenomena of Physics.

Third—Personal experimentation, in which the student himself uses such apparatus of the laboratory as furnishes results suitable for recording and reporting.

## ORDER OF EXERCISES.

*First Year.*

First Term—Principles of Physics, and Illustrated Lectures.

Second Term—Physical Laboratory: Acoustics, and Optics.

Third Term—Physical Laboratory: Optics.

*Second Year.*

First Term—Physical Laboratory: Heat.

Second Term—Physical Laboratory: Heat and Electricity.

Third Term—Physical Laboratory: Electricity and Magnetism.

The laboratory work will consist either of reviews of the experimental determinations of others or of original investigations. The data must be carefully noted, the results worked out, and all reported on the regulation-paper of the department. These reports will be critically examined as to neatness of appearance and accuracy of results. Per-

spicuity should be studied. The subjects and topics should be separated by proper headlines, and the data and results should be put in tabular form where admissible.

*Text-Books and Works of Reference.*—Atkinson's and Ganot's Physics, Deschanel's Physics, Kohlrausch's Physical Measurements, Pickering's Physical Manipulations, Stewart's Heat, Jamin's Physique.

### MECHANICAL ENGINEERING.

This course is intended for those who desire to prepare themselves either for the profession of Mechanical Engineering, for superintending the construction of machinery, or for managing machinery in manufacturing establishments. In it instruction in Principles is combined with Practice. The former is mostly given by lectures, while the latter is confined to the Mechanical Laboratory.

The course includes the following special studies, all of which must be passed before taking the degree:

#### MECHANISM AND DRAWING—ONE YEAR.

First Term—Principles of Mechanism.

Second Term—Machine Designing and Drawing.

Third Term—Machine Drawing.

#### PRIME MOVERS AND MACHINERY—ONE YEAR.

First Term—Thermodynamics.

Second Term—Prime Movers.

Third Term—Machinery and Millwork.

Besides the above there will be required, for graduating:

Three terms of Elementary Laboratory Practice.

One term of Machine Construction in Laboratory.

One term of Strength of Materials.

#### EXPLANATION OF THE COURSE.

In the Principles of Mechanism are studied the parts of machinery by pairs; or, elementary combinations of mechanism. In this the form and arrangement of the parts necessary for securing the desired modification of motion is sought.

In the Machine Designing the student takes up some problem in the shape of a particular machine for a special purpose. The forms, dimensions, and arrangements of the parts are decided upon, and then a drawing is carefully made of the whole. Detail drawings to regulation size are then made, and finished in shade lines, as done in the best shops. The quality of these drawings is sufficient for the requirements of photo-engraving for illustrations upon circulars.

In Thermodynamics are studied the principles which form the groundwork of all heat engines.

In Prime Movers are studied all kinds of heat engines, such as steam, hot-air, etc., and also wind and water-wheels.

Mill-work and Machinery takes up valve-gears, fly-wheels, governors, efficiency of parts of machines, strength of parts, etc.

The Mechanical Laboratory is intended for acquainting the student with the materials used in machine construction; with the forms customary in machinery; to impart a degree of skill in the use of tools, and a knowledge of the operations and practices of shops.

The first term consists of the actual use of tools in executing a set of forms chosen, with a view to supplying the greatest possible amount of practical instruction for the time. This is combined with weekly lectures on tools and their use.

The second term carries the above practice to the fitting together of parts, and to the use of machine tools, such as the lathe, planer, etc. This is combined with weekly exercises in designing and drawing of machine elements, such as cranks, bearing boxes, stub-ends, etc.

The third term is fully occupied in fitting parts carefully together, as in the joints of machinery, and in finishing the surfaces by scraping, polishing, burnishing, etc. This is in combination with a weekly exercise in the invention of simple machines for specific operations, such as bending wire staples, cutting wooden combs, etc.

The fourth term of Mechanical Laboratory practice is constructive. It is taken in connection with the principles of mechanism. In the latter, problems in mechanism are worked out, forms and dimensions assigned to the parts, and then these are executed in the Laboratory, resulting in models of mechanical movements for the cabinet.

Projects and problems will be assigned to the pupil from time to time, requiring him to visit manufactures and report. Such reports should be neatly made out on the regulation papers of the Department. These will be taken, in part, for the examinations, and retained for the cabinet.

*Text-Books and Works of Reference.*—Rankin's Steam Engine, and Machinery and Mill-work; Weisbach's Mechanics; Willis's Principles of Mechanism; Belanger's Cinematique; Zeuner's Traité de la Chaleur.

## II. CHEMISTRY.

All students who wish to obtain a degree are required to study Chemistry for two terms. During this year General Chemistry, together with its most important applications to the arts, is taught by the use of text-books and of lectures, illustrated by an ever-growing collection of the materials used in manufactures, and by a very complete suite of experiments.

After the completion of this elementary course, those who desire to devote special attention to Chemistry enter the analytical laboratory, where they can carry on their work for two years or more.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy. He is also employed in making various compounds, and, if his time permits, studies exhaustively one or more of the elements and its important compounds.

The course of Quantitative Chemistry includes both the gravimetric and volumetric methods. The analyses are at first confined to those compounds whose structure is known, and afterwards extended to such bodies as the student may require in the special branch of the science to which he desires to devote himself. Opportunity is offered for the study of coals, minerals, fertilizers, soils, or of the useful and waste products in manufactures.

If the student desires, he will also be assisted in taking up in detail topics which relate to Agriculture, to Pharmacy, to Medicine, and to other sciences, or to arts in which the principles of chemistry are applied.

A summary of the course is given below :

## IN THE REQUIRED COURSE.

## GENERAL CHEMISTRY—TWO TERMS.

Inorganic and Organic Chemistry, and the applications of Chemistry to the Arts.

## IN THE SPECIAL COURSE.

## FIRST YEAR.

First Term—Qualitative Analysis: Reactions of Single Bases and Acids, Exercises in Blow-pipe and Flame Reactions.

Second Term—Qualitative Analysis continued: Determination of Mixtures, Blow-pipe Mineralogy, Preparation of Compounds.

Third Term—Quantitative Analysis, Stoichiometry.

## SECOND YEAR.

Quantitative Analysis: Special studies in Chemistry applied to Pharmacy, to Agriculture, to Manufactures, and to the Arts.

*Text-Books.*—Norton's Chemistry, Beilstein's Manual, Galloway's Qualitative Chemistry, Will's Qualitative Chemistry, Classen's Quantitative Chemistry, Fresenius's Quantitative Chemistry, Caldwell's Agricultural Chemistry.

*Books of Reference.*—Watt's Dictionary of Chemistry, Gmelin's Hand-Book of Chemistry, Wagner's Chemical Technology, Graham-Otto's Chemie, Rose's Analytischen Chemie, Gorup-Besanez's Physiologischen Chemie, Elderhorst's Determinative Mineralogy.

## III. MINING AND METALLURGY.

The course in Mining Engineering secures to the student careful instruction, with ample allowance of time, in the three fundamental branches of the art—mining, preparation of the ore, and its metallurgical treatment. These courses will comprise lectures, the study of text-books, preparation of maps, drawings, and sections, and visits to existing works, with careful reports upon them, and practice in estimates and designs.

For Assaying, there is a full equipment of furnaces and ores for the dry assay, and the wet methods are taught in the chemical laboratory.

An ample collection of minerals is provided, comprising all species with which the mining engineer should be familiar, and to this the students have constant and familiar access.

Crystallography is taught by the aid of a complete collection of large wood models, made especially for the department, and containing every common form.

To these special pursuits the student gives two-thirds of his time during two years. The technical studies of the department are supported by courses in Chemistry, Physics, Geology and Mathematics, in Civil and Mechanical Engineering, and in the German language.

*Text-Books and Books of Reference.*—Dana's Mineralogy, Egleston's Crystallographic Tables, Callon's Mining, Andre Mining and Mining Machinery, Phillips's Metallurgy, Egleston's Metallurgical Tables, Rittenger's Aufbereitung, Gætzschmann's Aufbereitung, Bodemann & Kerl's Assaying, Mitchell's Assaying, Von Cotta's Ore Deposits.

## MINING ENGINEERING.

## FIRST YEAR.

First Term—Mining and Crystallography.

Second Term—Ore and Coal Washing, and Mineralogy.

Third Term—Theory of Veins, and Assaying.

## SECOND YEAR.

First Term—Metallurgy and Machine Drawing.

Second Term—Metallurgy and Machine Drawing.

Third Term—Metallurgy and Mapping.

The Mining course is made more complete by the opportunities given for the study of Civil Engineering, and the instruction in Metallurgy is supplemented by the department of Mechanical Engineering.

## IN THE REQUIRED COURSE.

## MINERALOGY—ONE TERM.

Since the establishment of the Mining Department the study of Mineralogy has been added to the Preliminary Course. Instruction is given in Crystallography and Mineralogy by lectures, specimens, and models.

*Text-Book.*—Dana's Manual.

## THE SCHOOL OF NATURAL HISTORY.

## IN THE REQUIRED COURSE.

## BOTANY—ONE TERM.

*First Year.*

First Term—Structural and Physiological Botany.

Second Term—Structural and Physiological Botany.

Third Term—Systematic Botany. (Phænogamia.)

*Second Year.*

First Term—Systematic Botany. (Gramineæ and Cryptogamia.)

Second Term—Economic Botany, or Botany as applied to the Arts.

Third Term—Economic Botany, as applied to Garden, Field, and Forest Culture.

*Text-Books and Books of Reference.*—Gray's Botanical Text-Book, Loudon's Encyclopedia of Plants, Paxton's Botanical Dictionary, Lowe's British Grasses, Berkeley's Cryptogamic Botany, Cooke's Hand-Book of British Fungi, Darlington's American Weeds and Useful Plants.

## GEOLOGY AND PALEONTOLOGY.

In the required course which all regular students are obliged to complete before entering on the work of the schools, one term is given to each of the two subjects, Physical Geography and Elementary Geology.



For further study in this department, a knowledge of the elements of Chemistry and Physics is necessary. It is, therefore, required that students shall complete the study of these subjects in the required course before entering upon advanced work in Geology.

#### FIRST YEAR.

First Term—Lithological and Historical Geology, including the Elements of Paleontology.

Second Term—Geology of Ohio.

Third Term—Historical Geology and Paleontology.

#### SECOND YEAR.

First Term—Economical Geology: Building-stones, Limes, and Cements.

Second Term—Economical Geology continued: Fire-clays, Petroleum, and Salt.

Third Term—Relations of Geology to Soils and Water Supply.

An alternative course for the second year is provided, as follows:

First Term—Paleontology: Lower Silurian formations.

Second Term—Paleontology: Upper Silurian and Devonian formations.

Third Term—Paleontology: Sub-Carboniferous and Coal Measure formations.

Instruction in this department is given by lectures, text-books, and field practice.

The subject of Lithological Geology is taken up in lectures. The student is taught to recognize, promptly and certainly, at least twenty species of the minerals most commonly met with, and also ten to fifteen of the rock formations that are most abundant. The chemical composition of minerals and rocks is discussed, and such of the students as are working in the chemical laboratory are expected to make qualitative and, if possible, quantitative analyses of some of the specimens which they meet with in their geological study.

Stratigraphical Geology is taught by field practice and lectures. The student is made thoroughly acquainted with the various rock exposures that are readily accessible from Columbus, and is taught how to recognize in the field, and how to represent in sections and upon maps, the various facts with which he meets.

The orderly series of Ohio formations gives but little opportunity to observe and determine the "dip" of strata, and none to investigate the phenomena of "faults," which make so important an element in geological work generally. These subjects, therefore, are treated of in lectures.

The Geology of Ohio is also taught in lectures. The museum of the College contains every thing necessary to make the student familiar with our geological scale in all its essential elements.

In Historical Geology generally, Dana's Manual is used as a text-book, the recitations in it being interspersed with lectures whenever particular subjects seem to require fuller treatment than the text-book furnishes. In Paleontology enough is done to enable the student to determine the general geological horizon of any field. The characteristic fossils of the various periods are studied until they have become easily recognizable.

*Text-Books and Works of Reference.*—Dana's Manual of Geology, Jukes' Manual of Geology, Lyell's Student's Elements of Geology, Lyell's Principles of Geology (11th edition), Nicholson's Manual of Paleontology, Geological Reports of Ohio and other States, Bischof's Chemical Geology.

## ZOOLOGY AND COMPARATIVE ANATOMY.

Two courses of study are offered in this department—one in Zoölogy, and one in Anatomy and Physiology.

### ZOOLOGY.

#### FIRST YEAR.

First Term—Mammals.

Second Term—Birds, Reptiles.

Third Term—Amphibia, Fishes.

#### SECOND YEAR.

First Term—Arthropods, Mollusks.

Second Term—Echinoderms, Worms.

Third Terms—Cœlenterata, Polystomata, Protozoa.

The first year of this course is devoted entirely to the Vertebrates, their Anatomy, Classification, Distribution, etc. The first term of the second year is given largely to the study of the structure and life-history of Insects; the second term is in great part spent upon the Parasitic Worms—a group of organisms of great interest, both scientifically and practically. The work of this year is performed chiefly in the Laboratory.

No special text-book is used. The following are some of the books of reference accessible to the student: Owens' Anatomy of Invertebrates, Huxley's Anatomy of Invertebrates, McCalister's Invertebrate Morphology, Siebold's Anatomy of Invertebrates, Rolleston's Forms of Animal Life, Packard's Guide to the Study of Insects, Dana's Crustacea, Cobbold's Entozoa, Woodward's Mollusca, Dana's Zoöphyta, Pritchard's Infusoria, Wallace's Geographical Distribution of Animals.

## COMPARATIVE ANATOMY AND PHYSIOLOGY.

#### FIRST YEAR.

First Term—Anatomy, Human and Comparative.

Second Term—Anatomy, Human and Comparative.

Third Term—Microscopy and Histology.

#### SECOND YEAR.

First Term—Physiology: Recitations.

Second Term—Physiology: Recitations.

Third Term—Physiology: Recitations.

This course, while intended for general students also, is especially adapted to the wants of young men who look towards the profession of medicine and surgery, either Human or Veterinary. The work of the first two terms of the first year is largely performed in the dissecting room, and in the study of the admirable models of the human body, made by Auzoux, of Paris. Mivart's Anatomy is used as a text-book. The third term is spent in the Laboratory, over the microscope. Schäffer's practical Histology is used as a hand-book. The second year is spent in the study of Foster's Text-book of Physiology. It is to be hoped that before long a part of this year may be spent in Laboratory work.

The following, amongst other, are books accessible to the student: Owen's Anatomy of Vertebrates, Huxley's Anatomy of Vertebrates, Cuvier's Anatomie Comparée, Flower's Osteology, Parker's Monograph of the Shoulder-Girdle, Parker on the Skull, Cuvier's At-

las of Myology, Milne-Edwards's, Flint's, Carpenter's, and Küss's Physiology, Stricker's, Frey's, Beale's, Kolliker's, and Rutherford's Histology, Foster's Practical Physiology, Foster, Klein, and Brunton's Hand-Book for the Physiological Laboratory.

The department is also open to special students who desire to pay particular attention to any one subject, for the study of which they are prepared. Students who desire to acquire a thorough knowledge of the anatomy of the domestic animals, will have the use of the dissecting room, which will be kept supplied with material. Chauveau's Anatomy of the Domestic Animals is used as a manual. Special facilities are afforded young men who desire to read Human Anatomy before entering upon the work of the dissecting-room in the Medical School. Gray's Anatomy is used as a text-book.

One term in Human Physiology and one in Zoölogy are included in the Regular Course.

## AGRICULTURE.

### FIRST YEAR.

**First Term**—Soils are made a subject of examination, their geologic relations and origin are explained, their composition is shown, and how it is determined; the special adaptations of soils to particular crops and modes of culture is shown, and how to increase or restore exhausted fertility; the management of pastures and meadows; the character and value of the different grasses, clovers, and other forage plants; the culture of field crops, such as corn, wheat, oats, barley, rye, potatoes, etc.; also, the value and application of animal manures, marl, gypsum, wood-ashes, lime, superphosphate, guano, and city sewage.

**Second Term**—Work of the farm and improvements, plowing, harrowing, rolling, drilling, sowing, planting; Drainage, stone-drains, tile-drains, mole-drains, leveling-instruments, draining-tools, and the manufacture of drain-tiles; Irrigation, its value and methods; Farm Roads, and how to make them; Fences, material, construction, and costs; Rural Architecture, applied to the erection of farm-houses, barns, stables, etc.; Farm Machinery, plows, harrows, cultivators, rollers, drills, mowers, reapers, thrashers, pumps, wind-mills, etc.

**Third Term**—Orchards and Fruit trees; Vineyards and their management; Gardening for profit, ornamental and landscape gardening; Hedges, planting and trimming, and cost compared with other fences; Forestry, the value of timber, preservation of timber, and tree planting.

### SECOND YEAR.

**First Term**—The natural history, description, and adaptation of the various domestic animals—horse-training, cattle-feeding, dairy management, wool-growing, etc.

**Second Term**—Veterinary Medicine, General Principles, Causes, Symptoms, Elements of Disease; Classification of Diseases; Principles of Treatment, and Remedial Agents.

**Third Term**—Particular Diseases and Operations. These are carefully studied, and, so far as opportunity can be obtained, diseases are treated, and operations made, under the inspection of the class.

## ENGLISH AND MODERN LANGUAGES.

### ENGLISH.

It is now past dispute, that the thorough understanding of the language and literature of the present, requires knowledge of the language and literature of England, in its various periods, beginning with the very beginning—Anglo-Saxon. The following course is, accordingly, a progressive, historical course. The readings of the first year extend through the Shakspearean period, the last *formative* period alike for English

speech and English literary forms. Parallel with these text-readings (in which the classics selected are treated precisely as Latin and Greek texts are treated), are lectures historical and critical upon the literature. Rough notes are taken in the class-room; these are afterwards elaborated; and recitations upon them are made as if from a text-book.

Rhetoric and logic come in the second year—rhetoric as an aid to original writing, as well as just criticism and enjoyment of others' productions; and logic, primarily, as the indispensable foundation and ever-present, though often hidden, factor in all good writing; secondly, for its bearing upon the several sciences and sorts of research taught in the College; thirdly, as an introduction to philosophical reading; fourthly, as a mental discipline, than which there is none better.

Along with this, go lectures upon more recent literature.

#### FIRST YEAR.

First Term—Anglo-Saxon: Sweet's Anglo-Saxon Reader; Lectures on the Literature of the Anglo-Saxon Period.

Second Term—Anglo-Saxon continued; Early English: Sweet's Vision of Piers Plowman; Lectures on Early English Literature.

Third Term—Later English: Shakspeare—Select Plays; Lectures.

#### SECOND YEAR.

First Term—Rhetoric: Hepburn's Manual, with Exercises; Lectures on English Literature.

Second Term—Rhetoric finished; Logic: Jevon's Elements, with Lectures.

Third Term—Logic finished; Lectures on Contemporary Literature.

*Books Recommended for Reference.*—Marsh: Lectures on Origin, and History of English Language; Lectures on English Language and Literature; Taine's, and Craik's Histories of English Literature; Morris: English Accidence; Grein: Angelsächsische Bibliothek; Earl: Philosophy of the English Tongue.

#### GERMAN AND FRENCH.

In view of the fact that mental training is a chief aim of every part of a college course; that, for purposes of literary culture, the main thing a college can give is the easy reading and accurate understanding of the masterpieces of the language studied; and that in an institution in which the sciences are so prominent as they are with us, it is of the utmost importance that the ability to use foreign text-books and works of reference be acquired as soon as possible, the so-called "Conversational Method" is not employed, and "learning to speak" French and German is an incident rather than an aim of the course. This is of purpose, and according to the best college usage and authority. I believe, too, that the careful and continuous use of the grammar, lexicon, and well-chosen text is the only sure and usually the shortest road to accurate and fluent speech. Where small classes, with little else to do, can spend several hours each day with the teacher, a different method will often succeed; but in a college, and to meet the ends of a college, more and better results are secured by the grammatical and literary method. Give the student an accurate knowledge of the inflections and syntax of a foreign language; make him master of a full and idiomatic vocabulary of its words; let the reading of varied and well selected texts teach him the peculiarities alike of the thought and rhythm of the speech of the men whose works he studies; accustom him to the oral and written rendering of the foreign text into English, and of English texts

into foreign, and he will be no longer helpless in presence of a foreign poem or book on chemistry, and learning to speak, and speak well, will be easily acquired, and, when acquired, remembered.

In both the French and German course the student attends mainly to grammatical doctrine, and word for word versions and exercises at first, and to the literary characteristics and contents of what he reads as he progresses. In the second year courses of lectures upon the respective literatures are delivered.

## GERMAN.

### FIRST YEAR.

First and Second Terms—Whitney's Grammar and Reader.

Third Term—Schiller: *Der Neffe als Onkel*; Exercises in Composition.

### SECOND YEAR.

First Term—Goethe's *Egmont*; Lessing: *Nathan der Weise*; Lectures on Early German Literature.

Second Term—Lessing: *Nathan der Weise* finished; Richter: *Quintus Fixlein*; Lectures on Literature.

Third Term—Richter: *Quintus Fixlein* finished; Lectures.

*Books of Reference.*—Vilmar: *Deutsche Literatur-geschichte*; Wackenagel: *Geschichte der Deutschen Literatur*; Simrock; *Nibelungen-Lied*, in *Modern German*; Grimm: *Deutsche Mythologie*; Gostwick and Harrison: *Outlines of History of German Literature*.

## FRENCH.

### FIRST YEAR.

First Term—Duffet: French Grammar and Exercises.

Second Term—Grammar continued; Masson's French Classics, vol. 5.

Third Term—French Classics continued.

### SECOND YEAR.

First Term—Moliere: *Les Fourberies de Scapin*; Racine: *Athalie*.

Second Term—Corneille: *Cinna*; Racine: *Andromaque*; Bridge's *History of French Literature*.

Third Term—Feuillet: *Le Roman d'un jeune homme pauvre*; Bridge's *History* continued.

*Books of Reference.*—Brachet: *Grammaire Historique*; Chevallet: *L'Histoire de la langue Francaise*; Vinet: *L'Histoire de la literature, du xviiieme Siecle*; Parton: *The French Parnassus*; Van Laun: *History of French Literature*.

## LATIN LANGUAGE.

The course in Latin embraces two years of elementary work, and two years of regular college work. The elementary course is designed mainly for beginners, and those who have suffered from the lack of regular training, and thus cannot compete successfully in the advanced course with those who have been systematically taught in high schools. It is arranged as follows:

## ELEMENTARY LATIN.

## FIRST YEAR.

First Term—Leighton's Latin Lessons.

Second Term—Leighton's Latin Lessons completed; Cæsar's Commentaries, Book I.

Third Term—Cæsar's Commentaries, Books II and III.

## SECOND YEAR.

First Term—Virgil's *Æneid*, Books I, II, and III.

Second Term—Virgil's *Æneid*, Book IV; Cicero *In Catilinam* I, II.

Third Term—Cicero *In Catilinam* III, IV; *Pro Archia Poeta*.

Allen and Greenough's Latin Prose Composition is used throughout the year, in weekly exercises, and Allen and Greenough's Latin Grammar is used through the entire course.

## ADVANCED COURSE.

## FIRST YEAR.

First Term—Livy, Selections; History of Rome.

Second Term—Cicero: *De Senectute*; *De Amicitia*.

Third Term—Horace, *Odes*.

During the year lectures are given on Roman History and Antiquities, and the reading of the authors is accompanied with exercises in Latin prose composition (weekly) and in written translation.

## SECOND YEAR.

First Term—Horace, *Satires*, *Epistles*, and *Ars Poetica*.

Second Term—Tacitus, *Agricola* and *Germania*.

Third Term—Terence, *Andria* and *Adelphæ*; Quintilian, *Institutio Oratoria*.

Lectures are given during the year on Latin Literature and Philology.

*Admission*.—Candidates for the first-year class will be examined as follows: In Latin Grammar (Allen and Greenough's is preferred); writing Latin; three books of Cæsar's *Commentaries*; five orations of Cicero; and four books of Virgil's *Æneid*.

## GREEK LANGUAGE.

The course in Greek includes one elementary and two college years; and is arranged as follows:

## ELEMENTARY GREEK.

First Term—Leighton's Greek Lessons.

Second Term—Greek Lessons completed: Book I of Xenophon's *Anabasis*.

Third Term—*Anabasis*: Books II and III.

## ADVANCED COURSE.

## FIRST YEAR.

First Term—Xenophon, *Memorabilia*; Plato, *Phædo*.

Second Term—Herodotus, Selections; History of Greece.

Third Term—Euripides, *Alcestis*.

Lectures are given during the year on Greek History, Antiquities, and the Drama.

## SECOND YEAR.

First Term—Homer, *Odyssey*.

Second Term—Sophocles, *Œdipus Tyrannus*.

Third Term—Demosthenes, *Olynthiacs* and *Philippics*.

Lectures are given during the year on Greek Literature and Philology. Exercises in Greek prose composition (weekly) and in written translation constitute an important feature of the course.

**Admission.**—Candidates for the first-year class will be examined as follows: In Greek grammar (Goodwin's is preferred); in writing Greek, with the accents; and the first one hundred and eleven pages of Goodwin's Greek Reader (or three books of Xenophon's *Anabasis*.)

#### PROVISIONS FOR SPECIAL STUDENTS.

To students entering the University for the purpose of taking some special study, and who do not propose to complete a regular course, *full freedom in the selection of the branches which they will pursue is granted, subject only to the necessary limitation that they are prepared to take up with advantage the studies which they select.* They will enter the classes organized for the regular courses, and they can not be allowed to impair the quality of work done in the classes through their own inadequate preparation. Advanced students will find every facility for special work.

#### SPECIAL COURSE IN AGRICULTURE.

The University recognizes its obligations—imposed in the terms of the grant to which it owes its existence—to the great industrial interest of Agriculture. This obligation it has aimed to meet in the establishment of departments for thorough training in those branches of science upon which agriculture depends, *and also in fixing its standard of admission so that students may enter its classes from the common schools.*

To the question, what education it proposes to furnish to the farmer, it may be answered, that such a course as would secure the degree of Bachelor of Science from the University could be made to include all of the branches which in reality constitute agriculture, and, as far as theoretical instruction goes, could scarcely be improved in its adaptations to the necessities of the American farmer.

But this course requires for its completion six years from the common school, and there is good ground to fear that a young man who has been withdrawn for six years from the farm will scarcely return to it again. For the training, then, of the most of those who intend to devote themselves to practical agriculture, a scheme requiring less time must be found. In accordance with this view, a three years' course has been established, which offers to the young farmer a practical and serviceable range of study. This course is shown in the appended schedule:

##### FIRST YEAR.

First Term—Human Physiology, English Language, Algebra.

Second Term—Physical Geography, Zoölogy, Algebra.

Third Term—Botany, United States History, Geometry.

##### SECOND YEAR.

First Term—Physics, Chemistry, Geology.

Second Term—Physics, Chemistry, Geometry.

Third Term—General History, Mineralogy, Plane Trigonometry.

##### THIRD YEAR.

First Term—Zoölogy, Agricultural Chemistry, Practical Agriculture.

Second Term—Diseases of Animals, their Medical and Surgical Treatment; Agricultural Chemistry, Practical Agriculture.

Third Term—Diseases of Animals, their Medical and Surgical Treatment; Practical Agriculture; Surveying.



It will be observed that this scheme agrees for two years with the prescribed course already given, while the third year supplements that course in as practical a manner as possible, and adapts it to the demands of this particular calling. In the strictly agricultural part of the course, practice will be constantly combined with theory, and the student will thus retain familiarity with the life from which he has come, and to which he expects to return.

#### TRAINING FOR TEACHERS AND STUDENTS IN MEDICINE.

The advantages offered by the University in the training required for two callings, in particular, are so great that special attention is invited to them. To students fitting themselves to become teachers of Natural Science, and also to those designing to pursue the study of Medicine, courses of study could not be more perfectly adapted, if they were designed expressly for such service. The resources of the University in the way of collections, and the methods of study adopted in the more advanced classes—the work being mainly done in laboratories and museums—make it safe to say that a very important addition to the educational facilities of the State is here made.

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All students are required to take three daily recitations or their equivalent in laboratory work.

Certificates will be furnished to those who complete either the work of the Agricultural course, or of any special department.

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#### LITERARY SOCIETIES

There are two Literary Societies in the University, the *Alcyone* and the *Horton*. Both are provided with rooms in the University building, the equipment of the *Alcyone* hall having been mainly furnished through the generosity of the late John G. Deshler, of Columbus. The Societies are vigorous and effective, and furnish to the student a very desirable training in public speaking and parliamentary order.



## ADMISSION.

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For admission to the University, students must possess a competent knowledge of the branches taught in the common schools, viz., Reading, Orthography, Writing, Grammar, Geography, Arithmetic, and of Algebra through simple equations.

The attention of those proposing to enter the University is especially directed to the terms above given. A competent knowledge of the common school branches is required. The University does not undertake to do the work which the common schools are able and willing to do, viz., that of grounding the student in the elements of an English education. He must bring with him a fair measure of the training which these schools are prepared to give. If it be asked what is a competent knowledge of these branches, it may be answered that the candidate should certainly have knowledge enough of them to entitle him to a teacher's certificate from a county board of examiners.

Advanced standing will be granted to students upon their sustaining examination in any part of the course, prescribed or elective.

Graduates of the high schools of the State, and persons holding teachers' certificates of the eighteen months' grade, are admitted without examination.

It is, however, to be borne in mind that the amount of work done in several branches of science in the required course of the University, and the quality of work done in all, by reason of the superior facilities provided, render these studies quite different from those that are known by the same name in the schools of the State. Both Physics and Chemistry, for instance, occupy two terms of daily recitations, and with Botany, Physiology, and Zoölogy are able to avail themselves of all the resources of their respective departments. All students, therefore, are earnestly advised on entering the University to shape their work by the required course; in other words, to adopt this course as far as possible. Their studies are thus made consecutive, and a degree of symmetry is given to their education, so far as it is completed here. It is expected that many students will be able to enter the second year of this course.

Students entering from other colleges will be required to bring certificate of honorable dismissal.

## LIST OF QUESTIONS FOR ENTRANCE EXAMINATIONS, 1878.

## GRAMMAR.

1. Give an account of the time you have spent, the text-books you have used, and the advantages you have gained in studying English Grammar? Sign your name in full, with age, and post-office address.
2. Write short sentences containing pronouns of each kind, and parse in full the pronouns given.
3. Write a sentence having a clause for a subject.
4. Name and define the properties of verbs.
5. Under what heads is Grammar usually treated? Define each.
6. Write sentences containing the possessive case of James; the possessive plural of lady.
7. Parse the verbs in the sentence, "Let justice be done though the heavens fall."
8. Define the several kinds of sentences, and give an example of each.
9. Parse first three words in sentence, "Teach me what is true."
10. Analyze sentence given above.

## GEOGRAPHY.

1. Name the States bordering on the Gulf of Mexico.
2. What mountains between France and Spain?
3. How many counties in Ohio? Bound one.
4. Locate the Bahama Islands.
5. Do degrees of latitude vary in length? If so, why?
6. Which of the grand divisions has the most sea coast in proportion to its area, and how is it benefited thereby?
7. Define mathematical, physical, and political geography.
8. How far from the North pole is the Arctic Circle, and why placed there?
9. Name and locate the three largest rivers of North America.
10. What changes were made in the map of Europe by the treaty of Berlin?

## ARITHMETIC.

1. What is the least common multiple of 43, 93, 21, and 27?
2. Divide 7-8 of 16-19 by 4-11 of 33-29.
3. Reduce  $\frac{18 \frac{2}{7}}{2 \frac{3}{5} \text{ of } 3 \frac{5}{7} \text{ of } 5 \frac{7}{7}}$  to its simplest form.
4. How many yards of carpet which is three-fourths of a yard wide does it require to cover a floor 17 feet long and 16 feet 6 inches wide?
5. Reduce .445 of an acre to rods, feet, and inches.
6. Find the square of 0.9. Write result in words.
7. Find the square root of 0.9. to one figure.
8. How long must \$250 be at simple interest, at 6 per cent., to make the amount \$300
9. A horse is sold for \$160, which is 20 per cent. less than cost. Required the cost.
10. If 6 men can build 20 feet of stone wall in 10 days, how many men can build 360 feet of the same wall in 90 days?

## ALGEBRA.

1. Reduce to simplest form  $a + b - (2a - 3b) - (5a + 7b) - (-13a + 2b)$ .
2. Multiply  $x^2 - xy + y^2$  by  $x^2 - xy + y^2$ .
3. Divide  $x^4 - y^4$  by  $x - y$ .
4. From  $4a^2x - (2abc - 4bc + 8d)$  subtract  $(4a^2x - 2d) + abc$ .
5. Resolve into factors  $(x^3 - y^3)$ .
6. Give formula for finding square of sum of two quantities—difference.
7. Reduce to one fraction  $\frac{a}{a+1} + \frac{2}{a-2}$ .
8. Out of a cask of wine from which one-third part had leaked, 21 gallons were afterward drawn, and the cask was then half full. Required its capacity.
9. What is the value of  $x$  in the equation  $\frac{x}{a} - \frac{a}{a+b} = \frac{x}{a-b}$ ?
10. Explain *transposition*.

## EXPENSES.

A charge of \$5.00 a term, or \$15.00 a year, is made against all students, under the head of incidental expenses. *There is no charge for tuition in any department of the University*; but advanced students in Chemistry and Physics are required to pay fees to cover, in part, the cost of materials consumed, and the deterioration of the expensive instruments employed. The fee in the Chemical laboratory is \$10.00 per term, and in the Physical laboratory \$7.00 per term.

Two dormitories have been provided, in one of which board and furnished rooms can be obtained, at a charge of \$3.50 per week, two students occupying one room. If the student furnishes and takes care of his own room, he obtains board for \$3.00 per week.

*Board bills must be paid monthly in advance.*

The second dormitory contains ten rooms, and is designed for students wishing to board themselves. The rooms which are designed for two occupants are provided with stoves that can be used in cooking.

A deposit of \$5.00 is required at the beginning of every term from all students occupying rooms in the second dormitory, as a guarantee against willful injury to rooms or halls. For damages that cannot be traced to the individuals committing them, an assessment will be made upon the guarantee fund. In case no assessment is made, the deposit will be returned at the end of the term.

By the action of the Board of Trustees, all dues must be paid in advance, at the beginning of each term. Term bills receipted by the University Treasurer must be handed in to the President, before the student's name can be entered on the class-rolls of the University.

The University is connected with the central portions of the city by

two street railroads. Board, with furnished rooms, can be obtained in private families within convenient distance of the University at rates varying from \$4.00 to \$5.00.

Boarding clubs are in successful operation, in which good board can be had for \$2.25 per week.

It is the policy of the institution to give as much of the farm-work as possible to students who desire thereby to meet their expenses in part, *but the University is not able to guarantee work to any.* In the assigning of work to applicants, preference will be given to students in the department of Agriculture.

#### SUMMARY.

The expenses of a term of twelve weeks will include the following items:

Incidentals.....	\$5 00
Board in dormitory.....	42 00
Washing, lights, etc.....	10 00
Total .....	<u>\$57 00</u>

Students boarding themselves reduce this aggregate by at least \$20.00.

#### CALENDAR.

The Winter term commences on Thursday, January 2, 1879, and continues twelve weeks, closing on Wednesday, March 26.

The Spring term commences on Thursday, April 3, and continues eleven weeks, closing on Wednesday, June 18 (Commencement Day.)

The Fall term commences on Thursday, September 18, and continues fourteen weeks, closing on Wednesday, December 24.

For further information, address the President or any member of the Faculty, or the Secretary of the Board of Trustees.

# CATALOGUE OF STUDENTS.

NAME.	RESIDENCE.	COUNTY.
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## GRADUATE IN ARTS.

McFadden, John F..... | Cadiz ..... | Harrison.

## GRADUATES IN SCIENCE.

Dietrich, Charles H.....	Defiance.....	Defiance.
Dun, Walter A.....	London.....	Madison.
Howald, Ferdinand.....	Columbus.....	Franklin.
Howard, Curtis C.....	Columbus.....	Franklin.
Townshend, Arthur B.....	Avon.....	Lorain.

## CLASS OF 1879.

Humphrey, J. Scott.....	Findlay.....	Hancock.
McMackin, Amasa B.....	Newcomerstown.....	Tuscarawas.
Morrison, Mary Frank.....	Columbus.....	Franklin.
Noble, Warren F.....	Tiffin.....	Seneca.
Snyder, Henry, Jr.....	Springfield.....	Clarke.
Towne, Robert S.....	Portsmouth.....	Scioto.

## CLASS OF 1880.

Corwin, Edwin E.....	Columbus.....	Franklin
Cunningham, Arthur.....	Columbus.....	Franklin.
Jones, J. Paul.....	Hilliard.....	Franklin.
McCormick, John H.....	Columbus.....	Franklin.
Nutting, Myron E.....	Kent.....	Portage.
Short, Sidney H.....	Columbus.....	Franklin.
Smith, Florizel.....	Lithopolis.....	Fairfield.
Townshend, Alice M.....	Avon.....	Lorain.
Ward, John C.....	Willoughby.....	Lake.

## CLASS OF 1881.

Bennett, Edwin M., Jr.....	Urbana.....	Champaign.
Burt, William F.....	Newcomerstown.....	Tuscarawas.
Gregory, Hiram D.....	Portsmouth.....	Scioto.
Hyatt, Edward.....	Angusta.....	Carroll.
Keffer, Mary.....	Cleveland.....	Cuyahoga.
McClung, William E.....	Columbus.....	Franklin.
Palmer Charles O.....	Cleveland.....	Cuyahoga.
Seeley, Uri, Jr.....	Austinburg.....	Ashtabula.
Spielman, John A.....	Tiffin.....	Seneca.
West, James Park.....	St. Clairsville.....	Belmont.

## CLASS OF 1882.

Bixler, Samuel J.....	Brookville ..	Montgomery.
Brown, Christopher N.....	Ironton.....	Lawrence.
Cherryholmes, William K.....	Millersburg.....	Holmes.
Dahl, Harry B.....	Washington.....	Fayette.
Fassig, Oliver S.....	Columbus.....	Franklin.
Hyatt, Harry.....	Angusta.....	Carroll.
Keffer, Frederic.....	Cleveland.....	Cuyahoga.
Kelly, Thomas.....	McArthur.....	Vinton.
Langfitt, William C.....	Millersburg.....	Holmes.
Lewis, Harry J.....	West Lafayette.....	Coshocton.

## CLASS OF 1882—Continued.

NAME.	RESIDENCE.	COUNTY.
Makepeace, George D .....	Cleveland .....	Cuyahoga.
McCoy, Homer W .....	South Point .....	Lawrence.
Moore, Harry C .....	Columbus .....	Franklin.
Safford, Vinton P .....	Chillicothe .....	Ross.
Smith, William P .....	Chillicothe .....	Ross.
Waddell, Frederick J .....	Racine .....	Meigs.
Wikoff, John B .....	Columbus .....	Franklin.
Williams, Harley .....	Columbus .....	Franklin.

## SECOND YEAR—PRELIMINARY COURSE.

Ackerman, Eli O .....	Columbus .....	Franklin.
Ackerman, Fremont .....	Columbus .....	Franklin.
Anderson, George Y .....	Columbus .....	Franklin.
Baker, William V .....	Columbus .....	Franklin.
Bradford, Joseph N .....	Columbus .....	Franklin.
Brown, William G .....	West Manchester .....	Preble.
Criale, A. Milton .....	West Manchester .....	Preble.
Davis, Floyd .....	Ithaca, N. Y .....	
Donham, William W .....	Lindale .....	Clermont.
Dun, George W .....	Dublin .....	Franklin.
Dun, John .....	Dublin .....	Franklin.
Edwards, Frank .....	Bloomingsburg .....	Fayette.
Elliott, Leigh H .....	Bloomingsburg .....	Fayette.
Ely, William Arthur .....	Elyria .....	Lorain.
Flaher, Dudley T .....	Columbus .....	Franklin.
Foster, Jesse K .....	Brookville .....	Montgomery.
Fuller, Willard .....	Cleveland .....	Cuyahoga.
Fullington, Charles P .....	Irwin .....	Union.
Galbraith, John H .....	Columbus .....	Franklin.
Goldfrederick, Adolph .....	Circleville .....	Pickaway.
Hay, John H .....	Coshocton .....	Coshocton.
Hinman, Charles D .....	Columbus .....	Franklin.
Hochstetler, Charles E .....	Nebraska City, Neb .....	
Hubbard, Frank W .....	Columbus .....	Franklin.
Hughes, John W .....	Columbus .....	Franklin.
Hutchinson, Harry B .....	Columbus .....	Franklin.
Innis, Adam G .....	Columbus .....	Franklin.
Jewett, George F .....	West Canaan .....	Madison.
Knopf, George W .....	Columbus .....	Franklin.
Lovejoy, Jesse R .....	Columbus .....	Franklin.
Leonhard, Louis Charles .....	Dayton .....	Montgomery.
McDonald, Edgar M .....	Coshocton .....	Coshocton.
Milligan, James P .....	Rushville .....	Fairfield.
Mills, Augustus C .....	West Alexandria .....	Preble.
Orton, Edward, Jr .....	Columbus .....	Franklin.
Pheneger, Parker W .....	Columbus .....	Franklin.
Rohrer, Albert L .....	Farmer'sville .....	Montgomery.
Smith, Guy .....	Elyria .....	Lorain.
Vanderburg, Charles R .....	Columbus .....	Franklin.
Van Harlingen, Edward M .....	Columbus .....	Franklin.
Wirth, Herman .....	Columbus .....	Franklin.

## FIRST YEAR—PRELIMINARY COURSE.

Ackerman, Monroe F .....	Columbus .....	Franklin.
Anderson, James T .....	Columbus .....	Franklin.
Atwater, Arthur S .....	Cleveland .....	Cuyahoga.
Bancroft, Walter H .....	Columbus .....	Franklin.
Bingham, Edward .....	Columbus .....	Franklin.
Beverly, Frank Hamilton .....	Columbus .....	Franklin.
Bradford, Samuel .....	Columbus .....	Franklin.

## FIRST YEAR—PRELIMINARY COURSE—Continued.

NAME.	RESIDENCE.	COUNTY.
Brooks, Wilson .....	Columbus .....	Franklin.
Broucher, Marcus .....	Columbus .....	Franklin.
Brown, Charles W .....	Columbus .....	Franklin.
Carey, Samuel .....	Mt. Vernon .....	Knox.
Collins, Thomas K .....	Barnesville .....	Belmont.
Colvin, Darwin H .....	Columbus .....	Franklin.
Comstock, Charles B .....	Columbus .....	Franklin.
Cooke, Paul .....	Chillicothe .....	Ross.
Cornell, William B .....	Columbus .....	Franklin.
Coulter, Guy .....	Columbus .....	Franklin.
Crane, D. W .....	Mainesville .....	Warren.
Crawford, Robert A .....	Columbus .....	Franklin.
Creighton, William F .....	Malvern .....	Carroll.
Cunningham, Andrew .....	Columbus .....	Franklin.
Curtis, Helen G .....	Little Hocking .....	Washington.
Daymude, James A .....	Marble Cliff .....	Franklin.
Deterly, Frank C .....	Columbus .....	Franklin.
Doe, Charles A .....	Columbus .....	Franklin.
Dyer, David N .....	Galena .....	Delaware.
Ensey, Grace .....	Columbus .....	Franklin.
Fischer, Edward .....	Columbus .....	Franklin.
Fox, Herman S .....	Brookville .....	Montgomery.
Francisco, Bond .....	Columbus .....	Franklin.
Freeman, Charles .....	Columbus .....	Franklin.
Garrison, Richard F .....	Salem, N. J .....	
Garvin, Harry B .....	Columbus .....	Franklin.
Gemunder, Albert C .....	Columbus .....	Franklin.
Haerlin, Herman .....	Cincinnati .....	Hamilton.
Haines, Jettie .....	Oneida .....	Carroll.
Halm, William L .....	Columbus .....	Franklin.
Hamilton, Charles S .....	Columbus .....	Franklin.
Hawkins, James O .....	McArthur .....	Vinton.
Hayes, Alvin C .....	Burgh-Hill .....	Trumbull.
Hine, Louis A .....	Milan .....	Erie.
House, William D .....	Columbus .....	Franklin.
Housel William M .....	Middle Branch .....	Stark.
Houston, William Alexander .....	Marysville .....	Union.
Howald, Henry J .....	Columbus .....	Franklin.
Hull, Alice G .....	Columbus .....	Franklin.
Hull, Harry C .....	Millersburg .....	Holmes.
Huffman, Jacob A .....	Columbus .....	Franklin.
Kenney, Melvin P .....	Isle St. George .....	Ottawa.
Kenny, Minerva .....	Columbus .....	Franklin.
Kienzle, Frank .....	Columbus .....	Franklin.
Lakin, Milton C .....	Marble Cliff .....	Franklin.
Lamb, Elizabeth .....	Columbus .....	Franklin.
Law, George F .....	Willoughby .....	Lake.
Linton, Robert .....	Columbus .....	Franklin.
Longman, Lillie A .....	Columbus .....	Franklin.
Markley, J. Frank .....	Sulphur Springs .....	Crawford.
Marvin, Eva .....	Columbus .....	Franklin.
McGill, Charles .....	Columbus .....	Franklin.
Miner, Louis .....	Columbus .....	Franklin.
Miskimen, Geo. W. Jr .....	Newcomertown .....	Tuscarawas.
Mix, Melvin N .....	Avenue .....	Franklin.
Monypeny, William, Jr .....	Columbus .....	Franklin.
Mosher, George E .....	Chillicothe .....	Ross.
Mullins, William James .....	Allegheny, Pa .....	
Oberlin, Michael W .....	Middle Branch .....	Stark.
Orr, Charles .....	Columbus .....	Franklin.
Parker, William B .....	Columbus .....	Franklin.
Pence, Smith M .....	Urbana .....	Champaign.



## FIRST YEAR—PRELIMINARY COURSE—Continued.

NAME.	RESIDENCE.	COUNTY.
Peters, William L .....	Columbus .....	Franklin.
Pleukharp, Charles .....	Columbus .....	Franklin.
Poland, August A .....	Columbus .....	Franklin.
Rohr, Etta F .....	Canal Winchester .....	Franklin.
Sabine, Annie Ware .....	Richwood .....	Union.
Sawyer, D. W. C., Jr .....	Columbus .....	Franklin.
Schwenker, John .....	Columbus .....	Franklin.
Scurry, James R .....	Columbus .....	Franklin.
Shedd, Earl E., Jr .....	Columbus .....	Franklin.
Sheehan, Charles .....	Columbus .....	Franklin.
Siuka, Clinton P .....	Columbus .....	Franklin.
Spielman, David W .....	Tiffin .....	Seneca.
Stimmel, Turner .....	Columbus .....	Franklin.
Thompson, John G., Jr .....	Columbus .....	Franklin.
Upson, Joseph F .....	Tallmadge .....	Summit.
Wade, William M .....	Columbus .....	Franklin.
Whitehurst, George A .....	Canal Winchester .....	Franklin.
Whitten, William .....	Columbus .....	Franklin.
Wikoff, James E .....	Columbus .....	Franklin.
Wilcox, James B .....	Columbus .....	Franklin.
Wilgus, Lewis F .....	Conover .....	Miami.
Willard, Charles P .....	Point Pleasant, W. Va .....	
Wright, Charles H .....	Athens .....	Athens.

## UNCLASSIFIED STUDENTS.

Anderson, Newton M .....	Columbus .....	Franklin.
Baily, George S .....	Waynesville .....	Warren.
Baird, Lida M .....	Columbus .....	Franklin.
Baker, Chauncey B .....	Thornville .....	Perry.
Baker, Duey H .....	Columbus .....	Franklin.
Baker, Harry E .....	Thornville .....	Perry.
Barcus, Flora .....	Columbus .....	Franklin.
Barcus, Harry .....	Columbus .....	Franklin.
Beebe, Stacey B .....	Coshocton .....	Coshocton.
Bennett, Charles M .....	Urbana .....	Champaign.
Bohrer, James M .....	Baltimore .....	Fairfield.
Britton, Jennie .....	Monroe .....	Butler.
Brossman, Charles E .....	Lithopolis .....	Fairfield.
Brotherton, William .....	Cedarville .....	Greene.
Bryan, Ormond M .....	London .....	Madison.
Burns, William .....	Coshocton .....	Coshocton.
Butler, Albert C .....	Columbus .....	Franklin.
Clark, Elmer E .....	Orrville .....	Wayne.
Coman, Charles .....	Hanover .....	Licking.
Conley, Alice M .....	Shelby Iron Works, Ala .....	
Davis, Lucy J .....	Dublin .....	Franklin.
Denel, George C .....	Urbana .....	Champaign.
Doney, S. Darlington .....	Columbus .....	Franklin.
Downerd, Edward C .....	Zanesville .....	Muskingum.
Dun, Charles B .....	London .....	Madison.
Ewing, Kittie .....	Columbus .....	Franklin.
Falconer, Cyrus, Jr .....	Gore .....	Hocking.
Fay, F. Willis .....	Columbus .....	Franklin.
Felch, Will Farrand .....	Columbus .....	Franklin.
Field, Flora .....	Columbus .....	Franklin.
Field, Sarah J .....	Columbus .....	Franklin.
Fitch, Eliza D .....	Columbus .....	Franklin.
Galbreath, John W .....	Neville .....	Clermont.
Gibson, Agnes E .....	Elyria .....	Lorain.
Gibson, Mary E .....	Elyria .....	Lorain.
Gill, Allie B .....	Columbus .....	Franklin.



## UNCLASSIFIED STUDENTS—Continued.

NAME.	RESIDENCE.	COUNTY.
Gill, Maggie H.....	Hilliard .....	Franklin.
Glover, Sioux.....	Hilliard .....	Franklin.
Graham, Dora .....	Clarksburg .....	Ross.
Graham, Rebecca .....	Clarksburg .....	Ross.
Greene, Harry N .....	Atwater .....	Portage.
Griffin, Theodore L .....	Columbus .....	Franklin.
Hall, Calvin C.....	Crestline .....	Crawford.
Harsh, Nannie.....	Oneida .....	Carroll.
Hershey, Benjamin F.....	Union .....	Montgomery.
Hine, Adaline .....	Milan .....	Erie.
Hinman, Ella J.....	Columbus .....	Franklin.
Houston, Margaret E.....	Cannonsburg, Pa .....	
Hughes, Frank L.....	Columbus.....	Franklin.
Hutchinson, Mary .....	Columbus.....	Franklin.
Hubbard, Herman M.....	Columbus.....	Franklin.
Innis, Isabella C.....	Columbus.....	Franklin.
Innis, Louvina C.....	Columbus.....	Franklin.
Innis, Maxwell P.....	Columbus.....	Franklin.
Innis, Sarah G.....	Columbus.....	Franklin.
Kellerman, Charles C .....	Cedar Hill.....	Fairfield.
King, David P.....	Medina .....	Medina.
Koehler, Nicholas .....	Hilliard .....	Franklin.
Lane, Louis .....	Mt. Vernon .....	Knox.
Lee, Edwin S.....	Coshocton .....	Coshocton.
Le Moyne, Mary .....	Chicago, Ill.....	
Le Moyne, Madeleine R .....	Chicago, Ill.....	
Lewis, Charles M.....	Circleville .....	Pickaway.
Lynn, Chester G.....	North Jackson.....	Mahoning.
Markley, Horatio .....	Nevada .....	Wyandot.
Martin, Harry .....	Mt. Vernon .....	Knox.
Marvin, Frederick.....	Columbus.....	Franklin.
Mathew, Katharine A .....	Columbus.....	Franklin.
McDonald, John M.....	Columbus.....	Franklin.
McDowell, John A .....	Columbus.....	Franklin.
Merion, Charles M., Jr .....	Columbus.....	Franklin.
Miller, Charles C.....	Baltimore .....	Fairfield.
Miller, Charles E .....	Middletown.....	Butler.
Miller, William H.....	McArthur.....	Vinton.
Morgan, R. M.....	Mt. Vernon .....	Knox.
Morrow, R. H.....	Staubenville .....	Jefferson.
Mosher, George C.....	Findlay.....	Hancock.
Mustaine, Jefferson K.....	West Liberty .....	Logan.
Nichols, J. W.....	Morristown .....	Belmont.
O'Brine, David .....	Worthington .....	Franklin.
Osborn, Mary R.....	Columbus.....	Franklin.
Pool, Harwood R.....	New York City.....	
Rector, Allen T.....	Nebraska City, Neb.....	
Reed, William F.....	Pomeroy.....	Meigs.
Reeve, J. Charles.....	Dayton .....	Montgomery.
Reilly, Jane O.....	Marysville .....	Union.
Robinson, Edward L.....	Columbus.....	Franklin.
Robinson, Parl C.....	Kenton .....	Hardin.
Royce, Walter A.....	Columbus.....	Franklin.
Sawyer, Reuben A .....	Columbus.....	Franklin.
Schoch, Laura A.....	Canal Winchester.....	Franklin.
Schoonover, Mollie .....	Kenton .....	Hardin.
Schneller, A. W.....	Columbus .....	Franklin.
Shedd, Frederick .....	Columbus.....	Franklin.
Shepherd, Chester C .....	Columbus.....	Franklin.
Shinn, Charles A.....	Selma .....	Clarke.
Smith, Horace .....	Boswell.....	Mahoning.

# ANNUAL REPORT.

## UNCLASSIFIED STUDENTS—Continued.

NAME.	RESIDENCE.	COUNTY.
Smith, Lot L., Jr.....	Columbus.....	Franklin.
Tarbox, Theodore.....	Cedarville.....	Greene.
Townshend, Harriet N.....	Columbus.....	Franklin.
Wade, Julia F.....	Columbus.....	Franklin.
Wade, Susie K.....	Columbus.....	Franklin.
Walton, Alice.....	Hilliard.....	Franklin.
Warner, Cora.....	Chillicothe.....	Ross.
Webb, Mary.....	Columbus.....	Franklin.
Westfall, Lafayette.....	Covington.....	Miami.
Whaley, Charles.....	Pomeroy.....	Meigs.
Wilgus, Horace L.....	Conover.....	Miami.
Williams, George.....	Columbus.....	Franklin.
Wing, Charles M.....	Newark.....	Licking.
Wilson, Josiah D.....	Clarksburg, W. Va.....	
Wilson, Stonewall Jackson.....	Clarksburg, W. Va.....	
Wood, Joshua G.....	Columbus.....	Franklin.
Wood, Kenneth D.....	Columbus.....	Franklin.
Woodbury, William.....	Columbus.....	Franklin.
Woods, Mary G.....	Columbus.....	Franklin.
Woodward, Charles A.....	Columbus.....	Franklin.
Wormley, Mary W.....	Columbus.....	Franklin.

# THE LIBERAL EDUCATION OF THE INDUSTRIAL CLASSES.

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AN ADDRESS DELIVERED IN THE CHAPEL OF THE OHIO STATE UNIVERSITY,  
AT THE GRADUATION OF ITS FIRST CLASS, JUNE 19, 1878.

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BY PRESIDENT EDWARD ORTON.

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This institution reaches to-day a well-marked stage in its history. Five years ago it opened its doors to a score of students that knocked for admission. To-day its doors are opened again, but this time to give egress to a still smaller number, who have been the first to make their way through its Lecture Rooms and Laboratories and to earn the degrees which it bestows. The kind of training that it gives can now for the first time be fairly judged. Along with the question that is sure to be raised—what kind of education has it given?—comes another: What kind of education was it set to give? This latter question is part of a larger one, viz.: What kind of education was the Congressional Land Grant of 1862 designed to provide? I know that this theme is well worn, and I should pass it by on this occasion were it not that the kind of training which we have essayed to furnish is still criticised and condemned in some quarters, and charges of unfaithfulness to our trust are still repeated against us. But our whole work is so obviously shaped according to both the letter and the spirit of the Land Grant, and these criticisms and charges spring so manifestly from misconceptions of its scope, that I feel myself obliged to-day to make a brief re-examination of this whole ground.

The Land Grant was given, to use its own words, “in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life,” the objective point, let it be noted, toward which the whole scheme of public education in this country has been from the first directed, sometimes blindly and unconsciously, it is true, but with an ever clearer recognition of the end to be attained.

I. Who constitute the “industrial classes” of American society? The answer is not hard to find. They make up American society. From them all are derived and to them all return. Our Puritan ancestors, in discarding the rights of primogeniture and in discouraging entailed estates, rendered it almost certain that all of their descendants would touch the earth at least in every third generation. Within that time Fortune is pretty sure to have turned her wheel and lowered all the proud.

Two great sections of our people are expressly referred to in the act of endowment, viz., those devoted to agriculture and those pursuing the mechanic arts. Now, it is manifest that no lines can be drawn around these pursuits which will not enclose the whole field of business activity. The man who moves a bushel of grain to market, the man who sells it in market, belongs by every right to the same class with the man who raises it in the harvest field. It is a mere question of the division of labor.

"When Adam delved and Eve span," agriculture and the mechanic arts were reduced to their lowest terms. Delving and spinning were the sole vocations of the industrial classes of that early day, but the same lines of work have been divided and subdivided by their descendants into scores of callings, each one of which is as necessary as any other to industrial life, and each one of which confers on him who follows it full membership in the ancient and honorable order of the industrial classes.

The term can by no means be limited to the classes that live by manual labor. It may seem paradoxical, but it is nevertheless true, that if any considerable section of our population is left out of account in the terms of the Land Grant, it is the class that lives by rude, manual labor at the great centers of population. No discrimination of course was exercised or intended, but this class is not American in origin, and has not become so in character, and consequently the provisions that are made for American education fail to appeal to it, except in a very limited degree. The help that it is prepared to use in the way of education is of a simpler and lower kind than that which the Land Grant was designed to supply.

It may seem paradoxical, again, to include the manufacturer, the merchant, the builder, the engineer, the banker, in the industrial classes, but here they indisputably belong. They have, for the most part, been gathered from fields which beyond question pertain to industrial life, and having been found faithful in few things, they have been made rulers over many. Though they are no longer able to put their own hands to the plow or plane or spindle, they are still carrying the heavier end of industrial life.

Certainly the Land Grant does not divide our people into rich and poor, cultivated and industrial, and then undertake to provide an education expressly for the latter class—an education which should train them for a narrow sphere and hold them there. Such a scheme is utterly repugnant to our national character and traditions, and would never dare to lift its head into the light of an American day. No such fatuity lies at the foundation of this great provision for national education. The act itself guards expressly against any narrow interpretation, when it declares its purpose to be to train the industrial classes "*for the several pursuits and professions of life.*"

The legislation, then, that undertakes to provide for the education of the industrial classes of American society, must provide for the education of the American people in its normal and characteristic conditions. It must adjust its scheme not to the demands of a contented peasantry who follow, generation after generation, the same humble round of care and labor which their fathers have trod, but rather to the varied necessities and privileges of the American freeman, who is not forbidden to covet for himself the best gifts of life and the State.

The aim of the grant was to make a large contribution to national education in its higher departments. Its purpose was to establish new centers of intellectual light and power throughout the land, and especially in those portions of the country that had not yet accumulated means for laying for themselves these foundations. out on western prairies, upon the broad savannahs of the South, along the slopes of the Rocky Mountains. To the older States it gave the opportunity of making a contribution of peculiar value to their educational resources. To all, it meant the cheapening of higher education. It put a price into the hands of many who would otherwise lack it, with which to buy wisdom. In the older colleges of the East the student's expenses have been doubled, or even trebled, within the last thirty years, but here are endowments ample enough to leave tuition free. This tuition, too, is attainable at the student's doors. He is no longer obliged to traverse half of a continent to begin his college work. These, then, were among the objects of the Congressional Grant, and all of them have been measurably attained in the progress thus far of the institutions founded on it.

II. We have found for whom this education was designed. Let us note some of the chief features by which it is to be distinguished:

1st. It is *higher education* which the grant provides. It presupposes the common school. This is distinctly involved in the very title of the bill—a bill for the endowment and support of *colleges*. The term college is an indeterminate quantity, it must be confessed, especially west of the Alleghanies; but after all it means *something*. It stands not for Latin and Greek or advanced science necessarily, but for a grade of work *distinct from, higher than, and supplementary to* the common school, and it is therefore a perversion of these endowments to use them in doing the work of the common schools, under whatever name. When the school has given to the student the training with which it is charged, when it has brought him to a mastery of the common branches, then—certainly not till then—has he a right to knock at the door of the university or college that is established upon the Land Grant. Especially in a State like this, where common school education has been so magnificently provided for, any trenching upon the pittance consecrated to higher education, in order to bring up the work of backwoods districts, would be an abuse of a sacred trust. The State colleges may exercise a very salutary influence upon the lower grades of public education by maintaining a proper standard of qualifications for entrance at their own doors, but when they gather into their halls an unsifted, unassorted horde of youths in all phases of intellectual development, and bringing with them the whole range of educational necessities, they not only lose the power of doing their own work worthily and well, but they always ignominiously fail in their vicarious tasks.

No! college and school are close enough to each other already. Let us not degrade and enfeeble both by blending them in an educational hybrid which can do the work of neither.

2d. The core and center of this education must be *science*. There are other branches which it may not exclude, there are some things which it must include, but as to its *leading* branches, it has no option. The places of honor must be given to Chemistry and Physics, to Mathematics and Engineering and Mechanics, to Botany and Zoölogy and Agriculture. If a new institution is created by the Land Grant, it is easy to determine the general order of its departments. If an institution already established becomes the recipient of the national bounty, the new wine is not to be put into old bottles, but a school of science, with its laboratories and museums, springs up under the shadow of university towers. This education is differentiated thus from all that has preceded it. It differs in warp and woof from the traditional college course. It belongs to a new dispensation. To lay foundations for a large and generous scientific training was beyond question the chief purpose of the National Grant. Other valuable ends were included, but without the clearly recognized and imperative demand for scientific training the endowment would never have been made. All the facts that bear on the case lead to this conclusion.

The United States Commissioner of Education, in a recent report, gives to this view the weight of his emphatic indorsement—an indorsement which is in some sense an official interpretation of the act under consideration.

“There seems,” he remarks, “to be in the popular mind a misapprehension of the scope of the law of 1862, providing for the establishment of these institutions. At the time of the passage of the act, there were in America very few instrumentalities for adequate instruction in either theoretical or applied science; while in Europe the schools of science had already reached a high degree of development and were exercising a far-reaching influence, not only on all of the professions, outside of the theological and the

legal, and in all departments of arts and manufactures, but also greatly modifying theories and methods of education in nearly all its phases. The international expositions had opened the eyes of our educators and scientists to the inferiority of our country in almost all departments of applied science. Our students were resorting to the European schools for scientific training. Few original works of authority in science were produced or could be produced here from the lack of the requisite opportunities. The country abounded in material wealth, it was poor and provincial in the sciences and arts. What was demanded for our country, therefore, was a class of schools combining in the curriculum means for thorough education in the sciences, both theoretical and applied, and in all the elements of true modern culture. Such appears to have been the intention of the law of 1862."

There are some callings in life to which this kind of training is better fitted than to others, and to that extent the Land Grant limits and restricts the education which it offers; but it limits it in no other way. Such an education may be used if the recipient sees fit in the way of preparation for theology or law. No obligation, expressed or implied, is violated in so using it, but to these callings, all the educational foundations hitherto laid, stand largely pledged. The older colleges are undoubtedly able to give better training for these fields than the newer ones. It would certainly be a great reproach to them if they were not, for this is their chosen ground. The knowledge and discipline that the latter give, will find their amplest use in the varied phases of industrial and scientific work, in agriculture, in mining, in manufactures, in medicine, in engineering, in effecting the exchanges of civilization.

3. This education must be *practical*. A practical education is one that can be applied to the interests and necessities of every day life, that can be used in doing the work of the world. This demand matches exactly with the last, which requires the subject matter of this education to be science. Nothing is so practical as science. It concerns itself with known qualities and relations and forces. It analyses, weighs, measures. But the demand concerns itself not only with the subject matter of the education given, but with the mode of giving it. Science may be taught in an unpractical way. It is so taught as often as any other line of subjects. The colleges built on these foundations must teach it in such a way as to give the student working power in every field which he enters. His science must be *applied*.

To this end, laboratories, and workshops, and museums, and collections are indispensable. These institutions are never spending money more exactly in the line of their duty and their interest than when they are using it in this way. The student is not to learn of instruments of precision, for instance, from the descriptions and figures of foreign authors only; nor to rest content with merely seeing such instruments through glass doors. With his own eye, he must scan the miracles of organization; with his own hand he must repeat or make the measure of star or monad. He must be able to show to the iron-master the value of the ore that looks worthless, or the worthlessness of the ore that looks valuable. He must save the farmer from falling a victim to the blunders of ignorance or the tricks of greed in the fertilizer which he buys. He must give to the engineer the limits of strength of bolt or beam, within which safety can be assured. He must save the community from the enormous tax which ill-judged or chimerical mining enterprises are for ever imposing. These are examples of the practical services to be rendered by scientific education, but of these services there is no end. Modern life is covered from the cradle to the grave with the useful gifts of science.

But the work of the world cannot be carried on by brain and eye and tongue alone—it needs the *hand* as well. Has the practical education of which we speak anything to do with the hand? It certainly must have, if it fully deserves its name, for the essence of much that is practical lies in hand-work.



Here is a point of confessed difficulty, and yet of vital importance. It is not concerned with college training only, but with our whole scheme of public education. The divorce between hand-work and head-work is so complete, and is maintained so long in the process of high-school and college education, that those who finish courses of study in either find it hard ever to unite them again. Disuse of manual labor breeds distaste for it, and, as a consequence, the callings that require it are shunned, while those in which it can be evaded are so unmistakably overcrowded as to seriously disturb the balance of the body politic. This is the charge most frequently and persistently urged against the colleges established to further industrial education, that the tracks between them and industrial life all lead one way—that many go from shop and farm, but that none return to them again. Much of this criticism is thoroughly unfair and unjust; but there is certainly good ground for dissatisfaction with the results that we are obtaining in these several phases of our public education. The great extension of the high-school system of late years has called very general attention to this dangerous tendency, and thoughtful men have long been busy with the problem. The solution that is always the first to suggest itself is the manual labor school; but I think it may be said with truth that this scheme has been weighed in the balance and found wanting. In its common form it is an artificial combination of two incongruous elements—education that has no direct bearing on labor, and labor that has no connection with education. In the agricultural colleges that adopt compulsory manual labor the case is somewhat better than in other institutions, for a small part of the labor required is educational. The student who expects to practice farming is learning in the best possible way a few of the things which he needs to know, and which he has not learned elsewhere. But for nine-tenths of the work required of him there can be no such claim. The object aimed at is avowedly moral rather than educational. It is to keep up the habit of manual labor that the system is enforced.

A measureable success can be secured for the scheme when it is made a central point, and when all the force of the institution is held tributary to it; but it may well be questioned whether the result is worth the price that is paid for it. For my own part, I am convinced that it is not, and I should feel that if the manual element in education were linked to this scheme—to stand or fall with it—its fortunes were already lost. What is needed is a system that shall give manual training in an educational way, and that can justify its introduction into an educational course on educational grounds. There is no country in the world where such a system is needed as much as in our own, and at no previous time in our history has the demand been as imperative as it is to-day.

Light comes at last from an unexpected quarter. Imperial Russia leads the way in the establishment of a system of hand-training that admits of being taught by the same methods by which chemistry and geometry are taught—in classes and by system. Massachusetts, always the pioneer in the thing that concern education, has already demonstrated the practicability of the system in American education. The practicability seems to me the only point involved, for the desirability of some system that shall reach this result is beyond question.

I believe that the duty and interest of the institutions founded to promote industrial education alike demand that they shall enter at once upon this work, even though it may still be counted in the experimental stage. The bearings of such training on American life are so numerous and so important, that we have no right to demand the pledge of assured success before making trial of it. Risk may well be pardoned here.

But is the practical education to be provided entirely embraced within the limits of such branches as have been already named? Are there not other branches that can be

styled practical by as good a right, that show themselves practical by as many tests, and that, therefore, make a just demand for a place in a practical curriculum? I venture to repeat a few paragraphs that I have used elsewhere in a similar connection:

“What shall be said of the study of language, especially of our own? Is not the power to make clear, accurate, intelligible statements of what we know or what we think a practical power? Does not our education show itself glaringly defective when it leaves us without this ability? Men with knowledge and ideas but without the power of adequate expression, like lumber wagons loaded with gold, never pass for what they are worth in the world. But this power to use language with precision and efficiency, and still more the ability to endure it with persuasive force, does not come to us in dreams. There is no royal road, no short cut to good English. It is one of the choice fruits of education. If obtained at all it must be bought with a price, the same price that is paid for solid attainments in any other department of knowledge—patient and extended study. Can such study be left out of a practical curriculum?

“Again, is not the training that enables us to detect a flaw in a definition or a fallacy in an argument as directly practical as the ability to test the strength of iron or the purity of white lead? If we have this power, do we not use it in the daily management of our lives? And if we have it not, do we not suffer from the lack in person and estate?

“Inductive logic has to do with the modes of reasoning employed in many branches of science—with the canons of evidence and the methods of proof—and especially with the proper construction of scientific experiments. In what respect is the power to construe an experiment less practical than the power to make one? Of how much use is an experiment unless its author knows what it proves? Nor let it be supposed that the ability to interpret experiments comes of itself. It not unfrequently happens in the practical world that two contradictory or even diametrically opposite statements are made in regard to some practical subject by practical men, both statements being made in good faith and with equal confidence, and both being established, as is thought, by decisive experiments. But nature is true though every man is proved a liar. The error lies in the interpretation of the experiments. Like an unwilling witness that still is bound by the sanctity of his oath, nature tells no more than she is obliged to tell. Point blank questions she answers truly, but to ambiguous ones she gives as ambiguous answers as ever the Delphic oracle gave. How few there are who know how to shape their questions so as to draw out a categorical answer, and how full the world is of these ambiguous replies.

“Nor in our zeal for the practical applications of science must we forget the deep root from which they spring—scientific enthusiasm—the love of the truth for its own sake.

“It is the theory of one generation which bears the practical fruit of the next. We marvel, as well we may, at the number and value of the contributions of science to human welfare which our own age has produced, and we glorify the authors of these practical applications, but let us not forget *their* forerunners and instructors, the men who, without the inspiration of popular applause, and without the hope of material reward, maintained the lonely quest of truth, served science for its own sake, and, by their discoveries, made possible the career of the successful inventor. The history of science is full of illustrations.

“In the best interests of practical utility, then, we must find a place on these foundations for pure science, as well as for applied science; for original investigation, as well as for successful use; for the patient study of those prolific principles which alone can



make our age confer on the age which is to follow it such advantages as it has inherited from its predecessor.

4. Finally, this education must be *liberal*. Strange blending of incongruous ideas and demands! "The liberal education of the industrial classes!" How can this be? That the industrial classes should be educated at all, involved the overthrow of the earlier civilizations of the world; that a limited, practical training shall be offered them, adapting them better to the narrow sphere in which they are doomed to live and labor, is the largest and most generous view that has yet found expression in the Old World. It was reserved for America to add a new and transforming element. In consonance with that recognition of the equality of human rights and privileges, which is the chief corner-stone of our political institutions, the demand at last finds clear and full expression that the education of a *nation* shall be made *liberal*. The crown of liberal culture is no longer the birthright of the few—it is set within the reach of all.

I have, on another occasion, attempted to answer the question, "What is a liberal education?" but the time does not now suffice either to repeat this answer or to frame a new one. It is enough to say that it is, in the highest sense, the education that aspires to a balanced and symmetrical culture of all human faculties; the education that concerns itself with this world of matter, which is the stage on which man plays his part, and with man himself, who is the actor on the stage, and of more value than it; it is the education that embraces science, literature, and philosophy.

But such an education, you say, can have no popular adaptations—no direct connections with industrial life. It concerns itself with but the smallest fraction of the race. It is true, as Huxley has well remarked, that there are but few in any generation that aspire to great excellence. The work of the world is mainly common work, and it needs to be done in a common way. Certainly, there are very few that are prepared, either by taste or endowments, to sweep the whole circle of human knowledge—but few that are fitted to make large and important contributions to the sum total of this knowledge, but it is a matter of infinite moment to the State that these few should find adequate opportunities and proper scope, for it is on this higher—this *highest*—education that the worth and value of each generation largely depends.

I beg leave to quote, in this connection, a few golden words from a recent address on education by Governor Horatio Seymour, of New York:

"Nothing can be more mistaken," he remarks, "than the idea that the public has no interest in anything more than what is called primary education, and that all beyond this is a matter of individual concern. If it is true that the intelligence, the virtue, and the prosperity of society demand that some be highly educated—if the interests of persons and property are promoted by this—then the public welfare calls for schools where they can be taught. If this education, by its very nature, makes the student through life, whatever his business may be, a living light-house, shining for the good of all, it is not unjust that such education should be in some degree at the public cost. If the man of science is, through life, by his intercourse with others, an unpaid teacher of facts which give prosperity to our work-shops and new value to every field of industry, it is fair that he should be helped by the public to gain that knowledge which is thus used for the public good. If common schools are demanded by the very nature of our government, then the interests of all the people demand that there shall be some so highly educated that they can, by this influence, keep alive in the public mind a sense of the value of such schools. Where there are no men well trained in learning, there will be no schools fit to teach its first elements."

These institutions, then, must be able to train the few who can carry forward the

knowledge and civilization of the race. But their office is not limited to these; they are able and willing to render a large service to the many; for the term *liberal*, when applied to the education of the industrial classes of American society, must be used in a much more restricted sense than that which I have already given it. But when most restricted, I take it that it is applicable to a training that resolutely refuses to consider solely the station which a man expects to fill. That field the term *practical* covers; but over and beyond the station liberal education recognizes the *man*—with capacities to touch more stations than one—with an intelligence derived from and kindred to the divine intelligence, and with an irrepressible desire to read the secrets of nature, and to learn his own being's end and aim.

The education which seeks in any worthy way to meet these demands is a liberal education—liberal in every one of the stages at which it may be considered.

There is a liberalizing power in well-equipped educational institutions. The stay of the student in them may be short and his work elementary, but library and laboratory, lecture-room and museum, and above all, contact with the masters and students of so many and such diverse branches of knowledge leave an impression on his mind of the breadth and interest of the field of education, that can never be effaced.

In rendering possible such foundations and equipments as these, the Land Grant is making a great contribution to the liberal education of the industrial classes.

Two weeks ago to-day, I stood near the center of one of the great prairies of Illinois. Its undulations stretched away on every side like ocean wastes. Upon one of its slopes, stately halls and ambitious towers arose, consecrated to learning and to labor. I entered the doors, and passed from room to room, finding a score of departments replete with the best facilities that the world knows, for teaching the various branches of modern culture. A library of 13,000 volumes, selected from all the great centers of literature and science, offered knowledge to all comers—nor offered it in vain, for throngs of eager-minded youths were watching daily at the posts of the doors.

I passed with awakened curiosity to the art gallery. After what fashion, I asked myself, is an art gallery on the prairies constructed? Some extravagance of subject or execution, some incongruity of material selected, may certainly be pardoned here. But there was no extravagance or incongruity to pardon. A chamber of the Louvre could not be more severe in its simplicity. Ranged around the ample room, accommodated with the best effects of light and shade, were one hundred or more thoroughly faithful copies of the master-pieces of sculpture that all the ages have preserved. Photographs and engravings of famous architectural and historic scenes were added; and the ripest student of art and history would turn his steps often hither and would linger long.

Leaving the main building, I found on one side a chemical laboratory, just erected, which in completeness and convenience certainly equals any laboratory on this side of the Atlantic. On another side, a spacious green-house, with many divisions, was filled with all rare and beautiful exotics, drawn from every clime and station. Beyond, was the machine shop, well appointed and ringing with busy and successful labor.

Herds of stately Shorthorns and deer-like Alderneys grazed in the fertile fields. A veterinary stable stood ready to receive the ailing animal and to make the sickness or suffering of one, save, by the examples of treatment given, scores on every side; while orchards, and gardens, and broad fields of ripening grain, fixed that square mile of the earth's surface forever in my memory.

In my heart, I blessed the Land Grant that had made all this possible, and that was giving to four hundred ingenuous youths, gathered from Western prairies, so many and so choice agencies of liberal and practical culture. And when I contrasted the fullness

and richness of the training imparted *where the State cherishes and supplements the bounty of the General Government*—when I contrasted this training with what many of these youths would have been obliged to content themselves with, were it not for this bounty, viz., with some pretentious institution, without resources or endowment, with an over-worked and under-paid faculty, with a library mainly made of public documents and obsolete polemical theology, with scanty and disabled apparatus, with museums grotesque in the variety of their contents and devoid of educational value, I still blessed the Land Grant and the colleges built upon it. They have not much to say about the Council of Trent and the Synod of Dort, it is true, and they do not nail to their doors the Augsburg Confession, the Westminster Catechism, or the Thirty-nine Articles, and above all, they do not establish compulsory religious worship—a requirement which many devout men feel to be more honored in the breach than in the observance. They do not attempt these things, for one reason, because they have no right to attempt them, for these colleges belong to a divided people—a people with ways of expressing their religious faith as many and as various as were the tongues at the Pentacostal Feast; but they are furnishing after all the highest proof of a Christian mission; they are bringing *glad tidings to the poor*—more life and larger—to the unprivileged classes of American society.

It is easy to ring the changes on the godless colleges, which are godless to the same extent and for the same reason that common schools and high schools are godless. It is possible to invoke fire from heaven on their rising walls, and to prophesy their swift destruction; but the fire does not always descend, and the Master sometimes rebukes his presumptuous followers.

“Let not thy weak, unknowing hand  
Presume my bolts to throw,  
And deal damnation round the land  
On each thou deemest my foe.”

I can think of a more excellent way. These colleges are here—they are here to stay. Bring to them, then, the gifts of Christian beneficence; broaden their courses, if they are narrow; sweeten their waters, if they are bitter; plant foundations for philosophy and art, and all elevating and humanizing culture, beside those of science. Where else can they do as great service?

Far be it from me to disparage or belittle the denominational or private colleges. All honor to them for the grand work which they have done and are doing in the education of our people. Let them lengthen their cords and strengthen their stakes. To maintain freedom and virtue on this continent where all the winds of doctrine are let loose to blow, will cost the strenuous effort of all who love freedom and virtue of whatever name.

But after all it is to *public* education that we must look for the chief power in welding and unifying the discordant elements of our national life, and of that public education, the State University, properly expanded and equipped, is the summit and the crown.

## TREASURER'S REPORT.

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COLUMBUS, OHIO, *November 22, 1878.*

HON. T. J. GODFREY, *Chairman of the Board of Trustees of the Ohio State University :*

SIR: I have the honor to submit herewith the eighth annual report of the financial transactions of the Ohio Agricultural and Mechanical College to May, 1878, and of the Ohio State University to the 15th instant inclusive.

The exhibits made are practically the same in method as in former years, and are as follows :

*Statement I.* A general statement of cash accounts, showing the receipts, disbursements, and cash balances at the beginning and close of the fiscal year.

*Statement II.* A statement of the condition of the several appropriations made by the Boards of Trustees of the College and University, the payments made from each during the year, and the balances remaining subject to draft November 15, 1878; with notes explanatory at the foot of the statement.

*Statement III.* A statement of the drafts made upon the *Income of the Endowment Fund* invested in the "*faith of the State,*" and its present condition.

*Statement IV.* A detailed statement of all the cash received, from every source, into the treasury, during the year.

*Statement V.* A detailed statement of the disbursements for the same period.

### THE ENDOWMENT FUND.

It will not be amiss to observe, to the end that the salient fact may be kept in view, that the proceeds of the sale of the land scrip donated to the State by act of Congress, amounted to only \$342,450.80 (see page 63 of report for 1877); that the annual interest thereon, at six per centum, is \$20,547.

The act of Congress is peculiarly forcible in providing that "no portion of said fund, nor the interest thereon, shall be applied, directly or

indirectly, under any pretense whatever, to the purchase, erection, preservation, or repair of any building or buildings."

Heretofore all the expenditures for the above purposes have been made from other funds, and, since it will be seen that the account for salaries alone exceeds the interest upon the endowment fund and its accumulations, it is equally obvious that there will not be in the future, as there has not been in the past, any perversion of any part of the income of this fund to any of the uses excepted to in the act of Congress.

#### ESTIMATES FOR THE CURRENT YEAR (1879).

I have heretofore only in a general way expressed the opinion that the ordinary current expenses involved in the support and maintenance of the University would absorb the definite and reliable resources. I can hardly do more now. It is in your power, as it is your province and duty, to adjust the expenditures to the reliable estimates of receipts. I can only judge of the future by the past, and for data to guide you in part, for the ensuing year, you are respectfully referred to Statements I, II, and III. A fair summary from these exhibits may be made as follows:

Statement I shows that the income from the Endowment Fund, for the year 1879 will be .....	\$32,840 00
[This income is for the calendar year 1879, but there is practically no difference in the result, as the income for the balance of the calendar year 1878 is undrawn.]	
From Statement II we may perhaps estimate the same revenues from students' term bills, rents, etc., say .....	3,840 00
From other sources, say .....	1,318 00
Total estimated resources.....	<u>\$38,000 00</u>

I estimate the authorized disbursements, for the same period, at \$38,000.

I not only do not see any ready method of reducing this estimate of disbursements, but am aware that there are many very proper ways of largely increasing it, if the funds were available; so pressing and imperative indeed are some of the needs of the University, that I can but hope that the General Assembly will deem it wise to extend its fostering care over the institution. In its wisdom it has, during the brief history of the University, legislated into existence four several boards of trustees, to manage its affairs. It has virtually said to these boards, "You must serve without compensation, but you shall be paid your necessary expenses while in the discharge of your duties, and you shall be paid out of the funds of the University." The expenses of the several boards up

to date have been \$8,753.84, and the only appropriation made by the State, to offset these expenses, was made in 1871, of \$4,500, to defray the expenses of the first board of nineteen, that had traversed the State during the previous year, in seeking a favorable place for the location of the College; the balance against the State, on this account is, therefore, \$4,253.84, and this is a legitimate item for a demand that the funds of the University be at least reimbursed, and also, that a reasonable amount be appropriated for the expenses of the Board for the current year.

Very respectfully yours,

HENRY S. BABBITT, *Treasurer.*

## STATEMENT I.

## GENERAL STATEMENT OF CASH ACCOUNTS FOR THE FISCAL YEAR ENDING NOVEMBER 15, 1878.

BY S. BABBITT, *Treasurer, in account with the Ohio Agricultural and Mechanical College  
the Ohio State University:*

DR.

-Nov. 16.	For balance of cash on hand .....	\$2,250 67
	To cash from various sources, viz:	
	From Treasurer of State on account of the income of the endowment fund, balance due on interest ac- crued in 1877.....	\$8,711 45
	On account of same for 1878.....	18,777 00
		<hr/> \$27,488 45
	From students' term bills:	
	Winter term, 1877-8.....	\$1,134 00
	Spring term, 1878.....	999 00
	Fall term, 1878.....	1,107 00
		<hr/> 3,240 00
	From rent of houses:	
	President Orton .....	\$420 00
	Prof. Mathew.....	166 63
	Prof. Mendenhall .....	20 00
		<hr/> 606 63
	From proceeds of notes received for	
	Virginia Military land sales .....	\$1,414 41
	For interest on same.....	221 40
	From sales of Virginia Military lands.	2,593 90
		<hr/> 4,229 71
	From sale of materials to students .....	82 31
	From interest on bank balances from Septem- ber 15, 1876, to November 15, 1878—two years and two months .....	93 26
		<hr/>
	Total receipts during the year.....	35,740 36
		<hr/>
	Total receipts, including above balance .....	\$37,991 03

CONTRA, CREDIT.

1878—Nov. 15.	By expenditures as follows (for details see Statement V.):	
	For support and maintenance of the University, viz:	
	For salaries .....	\$24,455 73
	For expenses of trustees.....	633 95
	For insurance .....	558 50
	For other current expenses.....	2,927 76
		<u>\$28,575 94</u>
	For furniture and apparatus.....	659 84
	For library.....	151 44
	For expenses on Virginia Military Land account .....	1,909 73
	For farm expenses, drainage, improvements and repairs...	3,656 76
	For Commencement expenses .....	150 00
	For department supplies* .....	676 34
	For entertainment of Legislative committee.....	28 60
		<u>\$36,008 74</u>
	Total disbursements for the year .....	\$36,008 74
	Leaving a balance of cash on hand of .....	1,982 29

VIRGINIA MILITARY LAND ACCOUNTS.

I have given the details of all transactions on this account that have passed through my hands, in the several preceding reports; a brief summary will show what these transactions have amounted to, and the present condition of the account.

The cash receipts into the treasury from proceeds of sale of Virginia Military lands have been as follows:

1871-2-3 .....	.....
1874 .....	\$1,885 00
1875 .....	8,121 82
1876 .....	3,870 35
1877 .....	752 49
1878 .....	4,229 41
	<u>\$18,859 37</u>
Total receipts to November 15, 1878 .....	\$18,859 37

The disbursements for the same period were as follows:

1872 .....	\$3,100 00
1873 .....	2,912 20
1874 .....	12 00
1875 .....	750 00
1876 .....	735 00
1877 .....	1,520 00
1878 .....	1,909 73
	<u>\$10,938 93</u>
Total disbursements.....	\$10,938 93
Balance, showing net receipts.....	\$7,920 44

The foregoing statement does not include any of the cash transactions in these lands by the committees of former boards, and referred to in the report of Hon. Ralph Lee

\* It will be observed that the cost of supplies to the departments was materially greater than this sum; the items previous to June 21, 1878, were charged to the account of "other current expenses."



n the annual report for 1876; nor of the notes given for deferred payments on land sales which remain in my hands, and a schedule of which is placed in possession of the Secretary of the Board. These notes, just two hundred in number, represent a nominal or face valuation of \$19,214.63; the larger part of them being past due, their real value is undeterminable at present.

The bills receivable, taken for sale of land, remaining in my hands November 15, 1877, amounted to.....	\$14,779 78
Notes received during the fiscal year 1878.....	5,849 26
Total .....	<u>\$20,629 04</u>
Amount collected on principal of the notes during the year (Statements I and IV) .....	1,414 41
Balance, showing notes receivable, unpaid to date, amounting to.....	<u>\$19,214 63</u>

I hereby certify that the above sum represents the nominal value of all the notes which I have received and not otherwise accounted for in the several annual reports heretofore made, and which now remain in my hands belonging to the Ohio State University.

HENRY S. BABBITT, *Treasurer.*

## STATEMENT II.—APPROPRIATIONS.

A STATEMENT SHOWING THE BALANCES OF THE SEVERAL APPROPRIATIONS AT THE BEGINNING OF THE FISCAL YEAR (NOVEMBER 16, 1877), THE AMOUNTS APPROPRIATED, AND THE SUMS EXPENDED FROM EACH APPROPRIATION DURING THE YEAR, AND THE BALANCES SUBJECT TO DRAFT AT THE END OF THE YEAR, NOVEMBER 15, 1878.

Appropriations, and for what purpose.	Balances of authorized appropriations unex- pended Nov. 15, 1877.	Appropriations made during the fiscal year 1878.	Amounts subject to draft during fiscal year 1878.	Expenditures during the fiscal year 1878.	Balances of appropria- tions unexpended Nov. 15, 1878.
Current expenses for the support and mainten- ance of the University.	\$12,617 11	\$33,777 00	\$46,394 11	\$28,575 94	\$17,818 17
Furniture and apparatus.	1,343 37	-----	1,333 37	659 84	673 53
Library .....	855 01	500 00	1,355 01	151 44	1,203 57
Expense on acc't of Vir- ginia Military Lands..	-----	\$1,909 73	1,909 73	1,909 73	-----
Entertainment of Legis- lative Committees.....	28 60	-----	28 60	28 60	-----
Farm expenses, drainage, improvements, and re- pairs.....	-----	\$3,958 22	3,958 22	3,656 76	301 46
Special analyses required by law.....	-----	500 00	500 00	-----	500 00
Commencement expenses, 1877 .....	-----	150 00	150 00	150 00	-----
Department supplies.....	-----	\$1,950 00	1,950 00	876 43	1,073 57
Totals .....	\$14,834 09	\$42,744 95	\$57,579 04	\$36,008 74	\$21,570 30

\* This item consists of appropriations made November 21, 1877, of \$25,000, and June 19, 1878, of \$8,277.00, for "support and maintenance;" June 21, 1878, of \$200.00 for advertising, and of \$300.00 for assistants to professors.

† This appropriation consists of the several items of expenditure on the same account, each of which was voted for by the Board.

‡ This amount includes \$2,000.00 appropriated November 22, 1877, for drainage, for farm buildings, and other improvements; May 17, 1878, \$300.00 for repairs to Club House; June 21, 1878, \$1,200.00 for carrying on farm operations; same date, to Professor of Agriculture for balance of account of farm expenses, \$408.22; and for cistern and repairs at the residence of Prof. Townshend, \$50.00.

§ There are two items in this appropriation—one made June 21, 1878, for department supplies, \$1,350.00, and one of \$600.00 September 12, 1878, for materials for the mechanical department.

|| This amount consists of disbursements for the following purposes: For fixed salaries, \$24,455.73; for expenses of Trustees, \$633.95; for fire insurance, \$558.50; and for other "current expenses" incident to the support and maintenance of the University, \$2,927.76.

The want of clearness in designating the specific appropriations from which orders should be paid has made it necessary to consolidate some of the appropriations: this has been done by associating those of a kindred character, yet it has been impossible for the Treasurer to make that sharp discrimination in the several debits that is desirable, and would seem to be required by the specific appropriations that have been made, for the truth is that he was not advised of the several minor appropriations until near the close of the year, and it became necessary to classify the payments as closely as possible with the material on hand. Whether any want of exactness in this distribution has been shown can be determined by those who know, in a comparison of the column of expenditures in the foregoing table with the detailed statement of disbursements, as shown in Table V of this report.

## STATEMENT III.

SHOWING THE AMOUNT OF THE OHIO STATE UNIVERSITY ENDOWMENT FUND, COMPUTED IN ACCORDANCE WITH THE PROVISIONS OF THE ACT PASSED FEBRUARY 10, 1871. (O. L., vol. 67, page 15.)

Amount of fund as principal, January 1, 1878.....	\$501,952 56
“Add six months’ interest on same to July 1, 1878, at 6 per cent. per annum.....	\$15,058 58
Add interest on \$34,500.00 of Franklin County Agricultural Bonds to March 15, 1878 .....	\$1,207 50
Add interest on last amount to July 1, 1878 .....	21 13
	<hr/> 1,228 63

Total additions first half year.....	16,287 21
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Making .....	\$518,239 77
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From which sum is to be deducted payments made by the State from income of the fund since last report, as follows:

Nov. 25, 1877—\$3,000.00, and interest to July 1, 1878, 7 mos. 2 days	\$106 00
Dec. 22, 1877— 3,000.00, “ “ 6 mos. 8 days	94 00
Dec. 31, 1877— 2,711.45, “ “ 6 mos. 0 days	81 34
Mar. 15, 1878— 5,000.00, “ “ 3 mos. 15 days	87 50
May 31, 1878— 3,000.00, “ “ 1 mo. 0 days	15 00
June 22, 1878— 3,000.00, “ “ 0 mos. 8 days	4 00
June 29, 1878— 1,000.00, “ “ 0 mos. 1 day	16
	<hr/>
\$20,711.45	\$388 00
	<hr/>

Total deductions first half year .....	21,099 45
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Leaving amount of new principal July 1, 1878.....	\$497,140 32
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Add interest on that sum to January 1, 1879 .....	\$14,914 21
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Add interest on Franklin county bonds as above, coupons falling due September 15, 1878.....	1,228 63
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Total additions second half year .....	16,142 84
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Making .....	\$513,283 16
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From which is to be deducted the following payments:

Aug. 6, 1878—\$1,000.00, and interest to Jan. 1, 1879, 4 mos. 24 days	\$24 00
Sept. 28, 1878— 2,000.00, “ “ 3 mos. 2 days	30 67
Oct. 22, 1878— 2,500.00, “ “ 2 mos. 8 days	28 33
Nov. 12, 1878— 1,277.00, “ “ 1 mo. 18 days	10 10
	<hr/>
\$6,777.00	\$93 10
	<hr/>

Total deductions second half year.....	6,870 10
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Leaving amount of fund derived from proceeds of sale of land-scrip and accumulations thereto, till January 1, 1879.....	\$506,413 06
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Upon this sum interest at the rate of six per cent. per annum, compounded semi-annually, is payable, under the provisions of the act passed May 1, 1878 (O. L., vol. 75, page 126), to the Ohio State University. Besides this, a deposit made with the Treasurer of State by the Trustees of the Ohio Agricultural and Mechanical College, complying with provisions of an act passed January 20, 1871, of the seven per cent. bonds of Franklin county, amounts to..... \$34,500 00

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Making an aggregate fund, held in trust by the State for the University, of..... \$540,913 06

Interest upon the above sums, computed upon the same terms, for 1879, will amount to ..... 32,842 00

Requisitions were made and warrants were issued upon the State Treasury during the fiscal year 1878, as above shown, to the amount of..... 27,488 45

This sum includes a portion of the interest accrued and subject to draft in 1877, but not drawn until after the close of the fiscal year 1877, amounting to..... 8,711 45

Making the amount received by the Treasurer of the University upon the appropriation of \$32,552.81, for interest on the irreducible debt of the State in 1878 (see page 25 of the Auditor of State's report for 1877), the sum of..... 18,777 00

And leaving still subject to draft, if required by the University, and if drawn out prior to January 1, 1879, the sum of..... 13,775 81

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\$32,552 81

The act of February 10, 1870, requires the calculations of interest to be made by semi-annual rests, on the first of January and July of each year, but the fiscal year of the State and of the University ends on the 15th of November, and the accounts are all settled at that date. It is held by the Attorney-General that the balances of appropriations undrawn on the first of January and July annually, revert to the parent fund, as part of the principal, which can not be diminished except by special legislation.

## STATEMENT IV.

A STATEMENT IN DETAIL OF CASH RECEIVED FROM ALL SOURCES, DURING THE FISCAL YEAR ENDING NOVEMBER 15, 1878, BY HENRY S. BABBITT, TREASURER.

Date.	From whom received, and on what account.	Amount.
1877.		
Nov. 16	Balance of cash on hand .....	\$2,250 67
21	Franklin National Bank, interest on bank account.....	36 64
30	Treasurer of State, income of endowment.....	3,000 00
Dec. 3	J. W. Kinney & Co., Virginia Military land sales.....	1,254 08
22	Treasurer of State, income of endowment.....	3,000 00
27	L. C. Shope, on Virginia Military land note.....	20 78
31	Treasurer of State, income of endowment, balance of interest accrued to date .....	2,711 45
1878.		
Jan. 22	President Orton, house rent.....	105 00
22	Jere. Ellis, Virginia Military land notes, \$54.38; interest, \$6.91 .....	61 29
25	W. H. Taylor, Virginia Military land note, \$39.00; interest, \$4.68 ...	43 68
30	Capt. C. A. Barton, Virginia Military land sales .....	50 00
30	A. M. King (by Barton), Virginia Military land sales.....	52 05
Feb. 4	Capt. Barton, Virginia Military land sales.....	16 97
5	J. Hauser, two Virginia Military land notes, \$114.00; interest on same, \$4.34.....	118 34
5	J. F. M. & H. B. Humphreys, Virginia Military land note, \$82.06; interest, \$41.94.....	124 00
Mar. 4	Jas. Newman, two Virginia Military land notes, \$25.00; interest, \$3.00 .....	28 00
4	Prof. Thos. Mathew, house rent to March 1.....	33 33
4	S. B. Violet, Virginia Military land sale.....	30 00
4	O. C. & M. McAfee, Virginia Military land sale .....	25 00
9	Capt. Barton, Virginia Military land sale, \$10.74 and \$93.10 .....	103 84
11	President Orton, house rent.....	70 00
15	Treasurer of State, income of endowment.....	5,000 00
15	C. Springer, Virginia military land notes—interest.....	3 24
25	E. Simpson, " " " .....	12 18
25	John Williams, Virginia Military land notes, \$46.70; interest, \$11.30 .....	58 00
26	Franklin National Bank, interest on deposits.....	26 62
26	Students, winter term bills, \$1,250.00, less refunded on fall and winter terms, 1877, \$116.00 .....	1,134 00
26	Prof. Mathew, house rent to April 1.....	16 66
April 6	Students, on spring term bills .....	546 00
8	" " " .....	254 00
9	Capt. Barton, Virginia Military land sales .....	36 75
15	A. Kisling, Virginia Military land, note paid.....	58 75
15	same " " interest .....	7 43
15	James Porter, " " " .....	21 00
15	same " " note .....	100 00
15	Julius Bresland, on Virginia Military land, note for \$111.50 .....	100 00
22	J. Hauser, Virginia Military land sale.....	41 90
29	Samuel Wood, Virginia Military land, note.....	16 00
29	same " " interest .....	4 70
29	Prof. Mathew, house rent.....	16 67
30	John Collins, Virginia Military land, note.....	30 00
30	same " " interest.....	50
May 2	J. M. Beaver, " " " .....	2 45
2	same " " note.....	20 75
7	Capt. Barton, Virginia Military land sale.....	54 90
	Students, balance of spring term bills, \$234.00, less deposits for damages refunded, \$35.00 .....	199 00
	Total receipts for calendar year, 1878, in name of O. A. and M. College, carried into account of O. S. University .....	\$20,896 62

## STATEMENT IV.—Continued.

Date.	From whom received, and on what account.	Amount.
1878.		
May 26	Receipts from O. A. and M. College account .....	\$20,896 62
30	J. Bresland, balance of note, \$11.50; interest, \$8.40 .....	19 90
30	Capt. Barton, sale of Virginia Military land .....	30 90
31	Treasurer of State, income of endowment .....	3,000 00
June 8	A. J. Waters, interest on note .....	3 00
8	President Orton, house rent .....	70 00
8	Prof. Mathew, house rent .....	16 66
20	Capt. Barton, Virginia Military land sales .....	73 90
22	Treasurer of State, income of endowment .....	3,000 00
24	President Orton, house rent .....	105 00
24	Prof. Mathew, house rent .....	16 66
29	Treasurer of State, income of endowment .....	1,000 00
July 3	Prof. Norton, sale of apparatus to students .....	82 31
3	W. J. Easter, note, \$38.40; interest, \$2.05 .....	40 45
3	Capt. Barton, sale of Virginia Military land .....	2 29
11	W. J. Easter, interest on notes .....	2 10
27	Cuppett & Webb, on note .....	134 40
29	Milton Hart, interest on five notes .....	8 80
Aug. 2	Capt. Barton, Virginia Military land sales .....	55 05
6	Treasurer of State, income of endowment .....	1,000 00
16	Francis Whitten, on note .....	5 00
16	T. C. Mendenhall, balance due on house rent .....	20 00
16	R. J. Johnston, notes, \$172.94; interest, \$24.06 .....	197 00
28	Capt. Barton, Virginia Military land sale .....	63 45
Sept. 2	Prof. Mathew, two months' house rent .....	33 33
5	B. M. Renoe, on note, \$12.50; interest, \$2.40 .....	14 90
13	Capt. Barton, Virginia Military land sale .....	49 90
18	Students, fall term bills (part) .....	880 00
20	J. G. Bond, note, \$68.00; interest, \$8.42 .....	76 42
28	Treasurer of State, income of endowment .....	2,000 00
Oct. 3	President Orton, house rent .....	35 00
3	Prof. Mathew, house rent .....	16 66
3	Capt. Barton, Virginia Military land sales .....	202 75
17	same " " .....	88 80
17	H. Cooper, on note, \$16.00; interest, \$5.90 .....	21 90
22	Treasurer of State, income of endowment .....	2,500 00
Nov. 4	President Orton, house rent .....	35 00
4	Prof. Mathew, house rent .....	16 66
4	Capt. Barton, Virginia Military land sales .....	74 75
9	same " " .....	166 82
9	Cuppett & Webb, by H. Leet & Co., on note .....	37 85
12	Chas. A. Barton, on his note .....	50 00
12	same Virginia Military land sales .....	100 00
12	Students, net balance of fall term bills .....	227 00
12	Treasurer of State, income of endowment .....	1,277 00
13	Capt. Barton, Virginia Military land sale .....	19 90
13	Erasmus Tucker, notes, \$160.40; interest, \$32.60 .....	193 00
15	Franklin National Bank, interest on deposit account to date .....	30 00
	Total receipts for fiscal year 1878, including balance of \$2,250.67, on hand Nov. 16, 1877 .....	\$37,991 03
	Total disbursements for same period (see statement No. V) .....	36,008 74
	Balance of cash on hand Nov. 15, 1878 .....	\$1,982 29

HENRY S. BABBITT, *Treasurer.*

STATEMENT V.

A DETAILED ACCOUNT OF PAYMENTS MADE BY HENRY S. BABBITT, TREASURER, DURING THE FISCAL YEAR ENDING NOVEMBER 15, 1878.

Date.	No of order.	To whom paid.	For what purpose.	From what appropriation.	Amount.
1877.					
Nov. 17	937	M. A. Snyder	Coal	Current expenses	\$141 00
17	938	Prof. Norton	Chemical supplies	"	343 80
17	939	E. F. Ensign	Expenses as trustee	Trustees' expenses	16 50
22	940	C. W. Horr	"	"	12 00
23	941	J. E. McKinnon	Painting gas-holder	Farm expenses and repairs	7 00
24	942	E. R. Kirk	Carpenter work	Current expenses	35 00
24	943	M. Dillon	Students' labor	"	7 63
28	944	H. S. Babbitt, Treasurer	Paid expenses of trustees	Trustees' expenses	178 10
28	945	J. Sullivant, Secretary	Salary for November	Salaries	125 00
28	946	President Orton	"	"	315 00
28	947	Prof. Mendenhall	"	"	225 00
28	948	" Townshend	"	"	225 00
28	949	" J. A. Church	"	"	225 00
28	950				
28	951	Prof. McFarland	Salary for November	Salaries	225 00
28	952	" Millikin	"	"	225 00
28	953	" Tuttle	"	"	225 00
28	954	" Norton	"	"	225 00
28	955	" Smith	"	"	150 00
28	956	" Mathews	"	"	85 00
28	957	" Alice Williams	"	"	45 00
28	958	" Lomia	"	"	50 00
28	959	M. Dillon	Extra work	Current expenses	16 55
28	960	same	Janitor, salary for November	Salaries	37 50
28	961	Ohio Furniture Co	Furniture	Furniture and apparatus	234 00
30	962	Prof. Townshend	Improvement of farm	Farm expenses, etc.	400 00
30	963	E. R. Kirk	Carpenter work	Current expenses	25 35
1	964	C. Shewry	Repairing gate	Farm expenses and repairs	8 00
2	965	M. McDonald	Hack hire for committee	Legislative committees	2 00
7	966	J. E. McKinnon	Labor in mining department	Current expenses	21 00
7	967	Prof. Townshend	Improvement of farm	Farm expenses and repairs	456 45
7	968	C. Kinsinger	Expenses as trustee	Trustees' expenses	37 00



11	969	Akins & Hampson .....	Water cooler .....	Current expenses .....	5 00
13	970	Prof. Tuttle .....	Salary for December .....	Salaries .....	225 00
15	971	A. Carlisle .....	Lumber .....	Farm expenses and repairs .....	54 04
15	972	H. N. Greene .....	Students' work .....	Current expenses .....	9 50
15	973	Samuel Harmon .....	Hack hire .....	Legislative committees .....	2 00
18	974	President Orton .....	Salary for December .....	Salaries .....	315 00
18	975	Prof. Mendenhall .....	" .....	" .....	225 00
18	976	same .....	Supplies for Physical Laboratory .....	Current expenses .....	8 94
18	977	Prof. Townshend .....	Salary for December .....	Salaries .....	225 00
18	978	" Church .....	" .....	" .....	225 00
18	979	" McFarland .....	" .....	" .....	225 00
18	980	" Millikin .....	" .....	" .....	225 00
18	981	" Norton .....	" .....	" .....	225 00
18	982	" Smith .....	" .....	" .....	150 00
18	983	" Mathews .....	" .....	" .....	85 00
18	984	" Lomia .....	" .....	" .....	50 00
18	985	M. Dillon .....	Janitor, salary for December .....	" .....	37 50
18	986	Miss Williams .....	Salary for December .....	" .....	45 00
18	987	R. G. Hanford & Son .....	Plants .....	Farm expenses and repairs .....	5 85
19	988	Columbus Transfer Co .....	Freights .....	Current expenses .....	4 52
19	989	Sidney H. Short .....	Sundry articles .....	" .....	4 66
19	990	A. Cunningham .....	Latin tutor .....	Salaries .....	50 00
22	991	M. Dillon .....	Extra work .....	Current expenses .....	9 00
22	992	E. R. Kirk .....	Carpenter .....	" .....	18 00
24	993	J. Sullivan, Secretary .....	Salary for December .....	Salaries .....	125 00
27	994	Stitt, Price & Co .....	Gas lime .....	Current expenses .....	3 06
29	995	Chas. M. Owen .....	Repairing furnace .....	Farm expenses and repairs .....	31 25
1878.					
Jan.	2	Hershiser & Gibson .....	Lumber .....	Current expenses .....	15 50
3	996	H. S. Babbitt, Treasurer .....	Printing .....	" .....	18 50
3	997	same .....	Postage, etc .....	" .....	7 10
		same .....	Trustees' expenses .....	Trustees' expenses .....	14 70
5	998	Kilbourne, Jones & Co .....	Hardware .....	Farm improvements, etc .....	79 55
7	999	McCune, Lonnis & Stoner .....	Brushes .....	" .....	6 50
15	1000	Geo. W. Gleason .....	Books, etc .....	Library .....	32 03
18	1001	Chas. A. Barton, agent .....	Services on account of Va. Mil. land .....	Virginia Military land .....	334 26
18	1002	Jeremiah Ellis .....	" .....	" .....	67 00
18	1003	W. W. Overman .....	" .....	" .....	28 00
18	1004	R. Leete, per S. S. Rickly .....	" .....	" .....	500 0
18	1005	J. Sullivan, Secretary .....	Expenses, music .....	Leg. com., \$24.60; cur. exp. \$21.40 .....	46 0
18	1006	E. S. Ritchie & Son, New York .....	Physical Laboratory supplies .....	Furniture and apparatus .....	122 4
21	1007	G. G. Collins, Administrator .....	Services of W. W. Pollard .....	Current expenses .....	33 7

DETAILED ACCOUNT OF PAYMENTS MADE, ETC.—Continued.

Date.	Number of order.	To whom paid.	For what purpose.	From what appropriation.	Amount.
1878.					
Jan. 22	1008	Freemans, Staley & Morton.....	Military department .....	Current expenses.....	\$34 63
22	1009	Ohio Tool Co. ....	Specimens of wood.....	" .....	4 00
25	1010	Pres. Orton.....	Salary for January.....	Salaries .....	315 00
25	1011	same .....	Sundry expenses .....	Current expenses .....	60 99
25	1012	Prof. Mendenhall .....	Salary for January .....	Salaries .....	225 00
25	1013	" Townshend .....	" .....	" .....	225 00
25	1014	" Tuttle.....	" .....	" .....	225 00
25	1015	" McFarland .....	" .....	" .....	225 00
25	1016	" Smith .....	" .....	" .....	150 00
25	1017	" Mathew .....	" .....	" .....	85 00
25	1018	" Lomia.....	" .....	" .....	50 00
25	1019	" Alice Williams.....	" .....	" .....	45 00
25	1020	" Norton .....	" .....	" .....	225 00
25	1021	" Millikin. ....	" .....	" .....	225 00
25	1022	" Church.....	" .....	" .....	225 00
26	1023	" Norton .....	Chemical supplies.....	Current expenses .....	298 06
26	1024	E. B. Kirk.....	Carpenter, etc.....	" .....	34 00
26	1025	M. Dillon.....	Janitor, salary.....	Salaries .....	61 00
27	1026	E. R. Kirk.....	Carpenter-work.....	Current expenses .....	12 00
30	1027	Geo. Stacey & Co.....	Gas retorts .....	Farm improvements, etc.....	110 00
Feb. 1	1028	Columbus Transfer Co.....	Freights .....	Current expenses .....	21 90
4	1029	J. Sullivant, Secretary.....	Salary .....	Salaries .....	125 00
5	1030	Comly & Francisco.....	Order-book .....	Current expenses .....	8 00
5	1031	Columbus Transfer Co.....	Ordinance .....	" .....	21 89
5	1032	Oliver Davie .....	Supplies for Zoological Department. .	Furniture and apparatus .....	90 00
7	1033	C. E. Thorne, Farmer.....	Paid for smith-work.....	Farm improvements, etc.....	3 25
16	1034	same .....	" lumber and labor .....	" .....	226 14
22	1035	A. D. Rodgers .....	Paid to Asa Gray for books .....	Library .....	51 21
22	1036	Prof Tuttle .....	Salary for February .....	Salaries .....	225 00
23	1037	M. Dillon .....	Extra work.....	Current expenses .....	33 05
26	1038	Pres. Orton.....	Salary for February.....	Salaries .....	315 00
26	1039	Prof. Mendenhall .....	" .....	" .....	225 00
26	1040	" Townshend .....	" .....	" .....	225 00

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26	1041	"	Church	//	//	225 00
26	1042	"	Millikin	"	000000000000000000	225 00
26	1043	"	McFarland	"	"	225 00
26	1044	"	Norton	"	"	225 00
26	1045	"	Smith	"	"	150 00
26	1046	"	Mathew	"	"	85 00
26	1047	"	Lomia	"	"	50 00
26	1048	"	Williams	"	"	45 00
26	1049	M. Dillon	Janitor	"	"	37 50
26	1050	Prof. Townshend	Advertising special course	"	"	81 75
27	1051	Wassall Fire-Clay Co.	Clay for retorts	"	"	1 50
27	1052	J. Sullivan, Secretary	Salary for February	"	"	125 00
1	1053	I. B. Potts	Repairing water pipes	"	"	3 15
6	1054	Columbus Paper Co.	Drawing department	"	"	7 20
12	1055	Columbus Transfer Co.	Freights	"	"	1 22
14	1056	W. McCrory	Gas coal	"	"	19 73
14	1057	Prof. McFarland	Supplies for department	"	"	4 00
20	1058	Chas. A. Barton, Agt.	Virginia Military Land account	"	"	181 00
23	1059	C. C. Howard	Chemical laboratory work	"	"	126 00
25	1060	E. R. Kirk	Carpenter-work	"	"	27 15
25	1061	Prof. Tuttle	Salary for March	"	"	225 00
26	1062	Pres. Orton	"	"	"	315 00
26	1063	J. Sullivan	" and expenses	"	"	128 50
26	1064	H. N. Greene	Students' labor	"	"	7 12
26	1065	Prof. Mendenhall	Salary for March	"	"	225 00
26	1066	" Townshend	"	"	"	225 00
26	1067	" Church	"	"	"	225 00
26	1068	" McFarland	"	"	"	225 00
26	1069	" Millikin	"	"	"	225 00
26	1070	" Norton	"	"	"	225 00
26	1071	" Smith	"	"	"	150 00
26	1072	" Mathew	"	"	"	85 00
26	1073	" Lomia	"	"	"	50 00
26	1074	" Williams	"	"	"	45 00
26	1075	A. Cunningham	Latin tutor	"	"	75 00
26	1076	M. Dillon	Janitor	"	"	38 00
26	1077	H. A. Rogers	Portable forge	"	"	40 95
26	1078	T. C. Mendenhall	Laboratory supplies	"	"	7 5
30	1079	M. Dillon	Extra work	"	"	29
30	1080	Wm. Cassill	Shrubbery	"	"	9
30	1081	Prof. Lomia	Instructor in elocution	"	"	
1	1082	Columbus Gas-fitting Co.	Labor and materials	"	"	

DETAILED STATEMENT OF PAYMENTS MADE, ETC.—Continued.

Date.	Number of order.	To whom paid.	For what purpose.	From what appropriation.	Amount.
1878.					
April	2	I. B. Potts.....	Repairing pipes.....	Farm, etc.....	\$4 90
	2	H. S. Babbit, Treasurer.....	Salary to April 1.....	Salaries.....	150 00
		same	Paid expenses of trustees.....	Trustees.....	57 95
		same	Postage, etc.....	Current expenses.....	6 12
	3	Columbus Transfer Co.....	Freight and drayage.....	".....	2 29
	4	E. B. Armstrong.....	Physical laboratory.....	".....	27 80
	4	Prof. Norton.....	Chemical supplies.....	".....	51 39
	5	Geo. H. Twiss.....	Physical laboratory.....	".....	12 55
	5	C. R. Stephens.....	Repairing glass.....	".....	4 50
	6	John H. Klippart.....	Books.....	Farm improvements, etc.....	36 00
	6	Prof. Mathew.....	Supplies.....	Library.....	70 00
	9	J. & G. Butler.....	Cement for cisterns.....	Current expenses.....	25 13
	10	Ed. Hughes.....	Repairing gas-works.....	Farm expenses, etc.....	21 25
	10	Wm. Odea.....	".....	".....	14 37
	16	I. B. Potts.....	" pipes.....	".....	17 82
	24	Forest City Chemical Co.....	Paint for pipes.....	".....	7 00
	24	Columbus Transfer Co.....	Freights.....	Current expenses.....	5 43
	26	Pres. Orton.....	Salary for April.....	Salaries.....	315 00
	26	Prof. Mendendall.....	".....	".....	225 00
	26	" Townshend.....	".....	".....	225 00
	26	" Church.....	".....	".....	225 00
	26	" Tuttle.....	".....	".....	225 00
	26	" Millikin.....	".....	".....	225 00
	26	" McFarland.....	".....	".....	225 00
	26	" Norton.....	".....	".....	225 00
	26	" Smith.....	".....	".....	150 00
	26	" Mathew.....	".....	".....	85 00
	26	" Lonia.....	".....	".....	50 00
	26	" Williams.....	".....	".....	45 00
	26	M. Dillon.....	Janitor.....	".....	37 50
	26	same.....	Extra work.....	Current expenses.....	44 25
	27	Prof. Mendenhall.....	Supplies for laboratory.....	".....	17 15
	30	Ass Gray.....	Nos. 73 and 74 Flora Braz.....	Library.....	15 00

May	1	1114	J. Sullivant, Secretary.....	Salary, expenses.....	Salaries, \$125; current exp., \$3.00	128 00
	1	1115	President Orton.....	Sundry expenses.....	Current expenses.....	37 49
	2	1116	Kilbourne, Jones & Co.....	Hardware.....	".....	9 50
	3	1117	Wassall Fire Clay Co.....	.....	Farm expense and repairs.....	10 85
	4	1118	T. C. Mendenhall.....	Spectroscope.....	Furniture and apparatus.....	86 42
	4	1119	Wm. H. McDonald.....	Repairing plastering.....	Farm expense and repairs.....	4 00
	4	1120	Prof. Norton.....	Chemical supplies.....	Current expenses.....	69 52
	6	1121	Henry S. Babbitt.....	{ Salary to May 1.....	Salaries.....	33 33
	13	1122	Prof. Mathew.....	{ Trustees' expenses paid.....	Trustees' expenses.....	10 00
	14	1123	R. G. Hanford & Son.....	Materials for his department.....	Current expenses.....	12 62
	14	1124	M. Dillon.....	Shrubbery for grounds.....	Farm improvements, etc.....	15 75
	15	1125	F. F. Hoffman.....	Salary as janitor.....	Salaries.....	30 00
	15	1126	Westwater & Co.....	Legal services.....	Current expenses.....	3 00
			[End of orders drawn in name of Ohio Agricultural and Mechanical College.]	Gas coal.....	".....	9 00
			Amount forward to Ohio State Uni- versity.....	.....	.....	\$20,418 73

Disbursements—Continued.

May	25	1	T. H. Schneider.....	Supplies for military department.....	Current expenses.....	\$3 00
	25	2	Prof Tuttle.....	Salary for May.....	Salaries.....	225 00
	28	3	E. R. Kirk.....	Gas-making, etc.....	Current expenses.....	19 70
	29	4	Wm. Riches.....	University seal.....	".....	13 00
	31	5	President Orton.....	Salary for May.....	Salaries.....	315 00
	31	6	Prof. Mendenhall.....	".....	".....	225 00
	31	7	" Townshend.....	".....	".....	225 00
	31	8	" Church.....	".....	".....	225 00
	31	9	" Millikin.....	".....	".....	225 00
	31	10	" McFarland.....	".....	".....	225 00
	31	11	" Norton.....	".....	".....	225 00
	31	12	" Smith.....	".....	".....	150 00
	31	13	" Mathew.....	".....	".....	85 00
	31	14	" Lomla.....	".....	".....	50 00
	31	15	" Williams.....	".....	".....	45 00
	31	16	M. Dillon.....	Balance of salary as janitor.....	".....	7 50
	31	17	Prof. J. A. Church.....	Supplies for department.....	Current expenses.....	39 35
June	4	18	W. M. Savage.....	Repairs Physical Laboratory.....	".....	3 50
	5	19	F. Koffer.....	Assisting janitor.....	".....	4 95
	5	20	M. Dillon.....	Night-work—making gas.....	".....	9 00

DETAILED STATEMENT OF PAYMENTS MADE, ETC.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	From what appropriation.	Amount.
1878.					
June 6	21	Hershlser & Gibson.....	Lumber for cabinet.....	Furniture and apparatus .....	\$4 25
12	22	Curtis C. Howard.....	Analytic work .....	Current expenses .....	56 00
13	23	D. M. Brelsford, Steward.....	Brooms .....	" .....	2 50
15	24	E. B. Armstrong .....	Sprinkling cans.....	" .....	4 00
18	25	J. Sullivant, Secretary.....	Salary to 15th.....	Salaries.....	107 41
19	26	President Orton .....	Salary for June.....	" .....	315 00
19	27	Prof. Mendenhall .....	" .....	" .....	225 00
19	28	" Townshend.....	" .....	" .....	225 00
19	29	" Church .....	" .....	" .....	225 00
19	30	" Tuttle .....	" .....	" .....	225 00
19	31	" Millikin.....	" .....	" .....	225 00
19	32	" Norton .....	" .....	" .....	225 00
19	33	" Smith .....	" .....	" .....	150 00
19	34	" Mathew .....	" .....	" .....	85 00
19	35	" Lomia .....	Balance of salary .....	" .....	100 00
19	36	T. C. Jones.....	Expenses to Washington .....	Virginia Military Land.....	50 00
19	37	Prof. McFarland .....	Salary for June.....	Salaries.....	225 00
20	38	A. Cunningham.....	Tutor in Ancient Languages.....	" .....	75 00
20	39	Stephen Johnson .....	Expenses as trustee.....	Trustees' expenses .....	10 00
21	40	H. S. Babbitt, Treasurer.....	Paid expenses of Board of Trustees.....	" .....	66 80
21	41	Chas. Downes .....	Helping janitor.....	Current expenses .....	7 75
21	42	T. J. Godfrey.....	Expenses as trustee.....	Trustee's expenses .....	17 95
21	43	J. B. Jamison .....	" .....	" .....	18 70
21	44	S. H. Ellis.....	" .....	Trustees' expenses.....	19 00
21	45	Alston Ellis .....	" .....	" .....	20 00
21	46	Chas. A. Barton, Agent.....	Expense Virginia Military Land.....	Virginia Military Land.....	439 05
21	47	S. H. Ellis, Chairman Farm Com .....	Use of farm.....	Farm expenses, etc.....	1,200 00
22	48	J. H. Anderson.....	Expense of special police.....	Current expenses .....	5 00
24	49	Prof. Mathew.....	Materials for his department.....	Department supplies .....	4 05
			{ Salary two months.....	Salaries.....	66 67
24	50	H. S. Babbitt, Treasurer.....	{ Paid expenses of trustees.....	Trustees' expenses .....	20 00
			{ Postage, etc .....	Current expenses .....	4 00
25	51	E. E. Corwin .....	{ Care of arms.....	" .....	4 00

25	July	53	Kerabaw, Krauss & Putnam.....	Carpet for assembly room.....	Furniture and apparatus.....	19 00
26		54	S. H. Short.....	Repairing gas pipes.....	Farm expenses, etc.....	9 43
27		55	Taylor & O'Harra.....	Carriage for Gov. Bishop at commenc't	Commencement expenses.....	6 00
29		56	Prof. Townshend.....	{ Balance farm account.....	Farm expenses, etc.....	183 99
				{ Purchase of cattle.....	".....	225 00
1		57	M. Dillon.....	{ Salary for June.....	Salaries.....	37 50
8		58	Kilbourne, Jones & Co.....	{ Night-work.....	Current expenses.....	7 00
10		59	Nevins & Myers.....	Hardware.....	".....	50
12		60	F. F. Hoffman.....	Stationery and printing.....	".....	102 70
12		61	McCune, Mithoff & Co.....	Legal services.....	".....	3 00
12		62	J. W. Jordan.....	Tools, fixtures, Physical departm't.....	Department supplies.....	14 53
16		63	M. Dillon.....	Carpenter work.....	Current expenses.....	13 75
17		64	Freemans, Staley & Morton.....	Salary for July.....	Salaries.....	23 00
19		65	Scioto Boiler Works.....	Supplies for military department.....	Department supplies.....	2 00
19		66	J. A. Res, Agent.....	Repairing gas-works.....	Farm expenses, etc.....	34 45
19		67	Lind & Newfang.....	Insurance.....	Current expenses (I).....	325 00
22		68	S. H. Banghman.....	Repairing roof.....	Farm expenses, etc.....	13 00
25		69	H. S. Babbitt, Treasurer.....	Repairing pumps.....	".....	17 10
26		70	Prof. Church.....	Paid trustees' expenses July 9.....	Trustees.....	53 30
27		71	Columbus Transfer Co.....	Materials for mining department.....	Department supplies.....	100 25
27		72	Cott & Hann.....	Freights.....	".....	1 29
31		73	President Orton.....	Printing.....	Current expenses.....	34 50
1	Aug.	74	W. S. Fray & Co.....	Paid for advertising.....	".....	162 25
3		75	Comly & Francisco.....	Paid for advertising.....	Current expenses.....	2 25
3		76	Columbus Transfer Co.....	".....	".....	5 25
3		77	F. D. Prouty.....	Freights.....	Department supplies.....	75
3		78	F. D. Prouty, agent.....	Lawn mower.....	Farm expenses, etc.....	14 00
3		79	M. Dillon.....	Insurance.....	Current expenses (I).....	75 00
3		80	Sunday Capital.....	Balance July salary.....	Salaries.....	15 50
5		81	Sunday News.....	Advertising.....	Current expenses.....	1 50
8		82	President Orton.....	".....	".....	2 25
10		83	Tyler & Allen.....	Paid for diplomas.....	Commencement.....	57 00
10		84	J. W. Jordan.....	Work on boarding-hall.....	Farm expenses, etc.....	71 40
12		85	H. Bancroft, agent.....	Carpenter work.....	".....	7 62
14		86	I. B. Potts.....	Insurance.....	Current expenses (I).....	87 50
14		87	same.....	Tools.....	Department supplies.....	30 00
15		88	J. Herman.....	Repairing steam pipes, etc.....	Farm expenses, etc.....	30 26
19		89	J. F. Linton.....	Painting boarding-house.....	".....	75 00
23		90	Geo. W. Gleason, (estate).....	Advertising.....	Current expenses.....	5 25
26		91	Stitt, Price & Co.....	Books for library.....	Library.....	9 70
				Lime for gas-making.....	Current expenses.....	4 03



DETAILED ACCOUNT OF PAYMENTS MADE, ETC.—Continued.

Date.	Number of order.	To whom paid.	For what purpose.	From what appropriation.	Amount.
1878.					
Aug. 26	92	President Orton	Expenses	Current expenses	\$54 40
26	93	J. & G. Butler	Cement for repairs	Farm expenses, etc	4 15
31	94	Evening Dispatch	Advertising	Current expenses	7 50
Sept. 5	95	W. A. Shoemaker	136½ tons coal	"	237 87
9	96	McCune, Mithoff & Co	Hardware	Farm expenses, etc	24 27
12	97	T. J. Godfrey	Expenses as Trustee	Trustees	14 30
12	98	Stephen Johnston	"	"	7 50
12	99	J. B. Jamison	"	"	9 50
14	100	W. L. Turner	Account rendered	Current expenses	7 84
14	101	J. A. Church	Sundries for his department	Department supplies	125 00
14	102	M. Dillon	Salary for August	Salaries	37 50
18	103	Martin Conner	Helping janitor	Current expenses	21 25
18	104	E. M. Van Harlingen	Insurance	" (I)	71 00
20	105	E. E. Corwin	Care of arms	"	2 25
21	106	G. Schatzman	Drayage	"	2 00
24	107	Columbus Gas Co.	Repairing gas-works	Farm expenses, etc	4 00
24	108	President Orton	Salary for September	Salaries	275 00
25	109	William Conrey	Work for Physical Department	Department supplies	6 00
27	110	Prof. S. W. Robinson	Salary for September	Salaries	225 00
27	111	" Townshend	"	"	225 00
27	112	" Church	"	"	225 00
27	113	" Tuttle	"	"	225 00
27	114	" Millikin	"	"	225 00
27	115	" McFarland	"	"	225 00
27	116	" Norton	"	"	225 00
27	117	" Smith	"	"	150 00
27	118	" Mathew	"	"	85 00
27	119	" Lomia	"	"	50 00
27	120	" Williams	"	"	55 00
27	121	Ruisinger & Bro.	Work for Mechanical Department	Department supplies	52 13
27	122	same	Repairs	Farm expenses, etc	4 17
Oct. 1	123	P. Hayden	Coal for Mechanical Department	Department supplies	4 75
4	124	Hershiser & Gibson	Lumber for Mechanical Department	"	18 04



4	125	William Halley.....	{ Plumbing for Chemical Laboratory ..	Farm expenses, etc .....	123 66
5	126	S. H. Short.....	{ Repairs .....	Department supplies .....	44 44
5	127	E. B. Armstrong.....	Supplies for Physical Laboratory .....	Farm expenses, etc .....	9 17
5	128	J. Herman .....	Repairing roof .....	" .....	18 65
5	129	M. Dillon .....	Painting .....	Salaries .....	65 71
7	130	J. Sullivant, Secretary.....	Salary for September.....	" .....	60 00
7	131	Siebert & Lilley.....	3 months' salary .....	Current expenses .....	125 00
14	132	J. R. Bartley, agent .....	Blank-book and binding.....	Library .....	35 25
15	133	J. N. Horne .....	Bryant's History United States.....	Commencement .....	7 50
15	134	M. Dillon .....	Music for commencement.....	Salaries .....	30 00
18	135	H. S. Babbitt, Treasurer .....	On account of salary for October.....	" .....	5 00
18	136	J. S. Sullivant, Secretary.....	{ Salary .....	Current expenses .....	150 00
21	137	McCune, Mithoff & Co.....	{ Expenses .....	Salaries .....	8 87
22	138	President Orton .....	Salary 1 month .....	Department supplies .....	41 66
22	139	Prof. Robilson .....	Hardware for Mechanical Department .....	Salaries .....	65 50
22	140	" Townshend .....	Salary for October .....	" .....	275 00
22	141	" Church .....	" .....	" .....	225 00
22	142	" Tittle .....	" .....	" .....	225 00
22	143	" Millikin .....	" .....	" .....	225 00
22	144	" McFarland.....	" .....	" .....	225 00
22	145	" Norton .....	" .....	" .....	225 00
22	146	" Smith .....	" .....	" .....	150 00
22	147	" Mathew .....	" .....	" .....	85 00
22	148	" Williams.....	" .....	" .....	55 00
22	149	" Lomis .....	" .....	" .....	50 00
22	450	Nevins & Myers.....	Printing .....	Current expenses .....	45 20
22	151	President Orton .....	{ Advertising .....	Commencement .....	13 75
24	152	M. F. Morrison .....	{ Commencement expenses.....	Current expenses .....	3 60
24	153	William Halley .....	Postage, etc .....	Salaries .....	12 68
25	154	W. M. Savage .....	Salary as librarian .....	Department supplies .....	25 00
31	155	M. Dillon .....	{ Plumbing for Chemical Laboratory ..	Farm expenses, etc.....	10 93
7	156	Chas. A. Barton, agent .....	{ Repairs .....	Department supplies .....	45 47
7	157	Kilbourne, Jones & Co.....	Tools .....	Salaries .....	12 90
8	158	Allston Ellis.....	Janitor for October.....	Salaries.....	60 00
8	159	S. H. Ellis.....	Services and expenses, Vir. Mil. Land.....	Virginia Military Land.....	310 42
8	160	T. J. Godfrey.....	Hardware for Mechanical Department ..	Department supplies .....	195 63
8	161	Stephen Johnston .....	Expenses as Trustee.....	Trustees .....	12 00
			" .....	" .....	11 85
			" .....	" .....	16 80
			" .....	" .....	10 00

DETAILED ACCOUNT OF PAYMENTS MADE, ETC.—Continued.

Date.	Number of order.	To whom paid.	For what purpose.	From what appropriation.	Amount.
1878.					
Nov. 8	162	N. R. Edgerton.....	Sundries for Mechanical Department	Department supplies .....	\$59 00
8	163	Miller, Green & Joyce .....	Sundries for College.....	Current expenses .....	4 30
11	164	Columbus Transfer Co.....	Freight .....	" .....	1 35
12	165	J. Sullivan, Secretary .....	Postage and other expenses .....	" .....	10 00
12	166	same .....	Salary to 15th.....	Salaries.....	41 66
12	167	Hope Machine Works.....	Models, etc., Mechanical Department.	Department supplies .....	27 10
12	168	Anton Brun.....	" .....	" .....	14 75
12	169	Ruisinger & Bro.....	Cases for Mechanical Department.....	Furniture and apparatus .....	62 80
		same .....	Blackboards for College .....	Current expenses .....	24 06
		Total disbursements.....			\$36,008 74

Total receipts, as shown by Statements I and IV .....	\$37,991 03
Total disbursements, as above.....	36,008 74
Cash balance on hand.....	\$1,982 29
	HENRY S. BABBITT, Treasurer.

REPORT OF FINANCE COMMITTEE.

COLUMBUS, OHIO, November 28, 1878.

The account and vouchers of the Treasurer have been examined and approved.  
By order of the Finance Committee: T. EWING MILLER, Chairman.

# REPORT OF FARM SUPERINTENDENT.

N. S. TOWNSHEND, M.D., *Professor of Agriculture*:

DEAR SIR: Under your direction, the following experiments have been made on the University farm during the past year:

1. Two experiments in hog-feeding, which were designed as inquiries as to the feeding value of dry ear-corn, and as to the form in which Indian corn may be most profitably fed.
2. A series of experiments in the use of certain chemical fertilizers.
3. A series of experiments in deep plowing.

## 1. HOG-FEEDING.

(a.) Thirteen hogs had been fed so as to fatten slowly during the fall of 1877, until, on the 1st of December, they weighed 4,660 pounds, averaging  $358\frac{1}{2}$  pounds. From that time their corn was weighed out to them at every feed, and the hogs were weighed at the end of every week, as shown by the following table, which gives the total weight and the average weight at the end of each week; the total increase for the week, and the increase of live weight for each bushel of corn consumed, counting seventy pounds of ears to the bushel:

TABLE No. 1.

Week ending—	Total weight.	Average weight.	Total gain.	Bushels corn consumed.	Gain per bushel.
December 8.....	4862	374	202	15.50	13.00
“ 15.....	5012	385 $\frac{1}{2}$	150	15.50	9.68
“ 22.....	5096	392	84	14.70	5.70
“ 29.....	5268	405 $\frac{1}{2}$	172	13.36	12.85
January 5.....	5330	410	62	13.57	4.56
			670	72.63	9.22

If we average the first, second, and third weeks, we shall find that each bushel of corn made 9 54-100 pounds of pork. Taking the second, third, and fourth weeks, we find a yield of 9 32-100 pounds per bushel.

Taking the third, fourth, and fifth weeks, the average product is 7 63-100 pounds per bushel, while the table shows also a decrease in the consumption of corn, thus showing that the hogs not only ate less corn as they approached maturity, but that they also utilized less of what they did eat.

(b.) On the 11th of January, 1878, sixteen young hogs, about eight and a half months old, and weighing 3,192 pounds, an average of  $199\frac{1}{2}$  pounds, were put in the pen from which the previous lot had been taken, and fed during the following week 17 3-10 bushels of corn, from which they made a total gain of 166 pounds, or 9 6-10 pounds to the bushel of grain. They were then separated into four lots, as nearly equal in apparent thrift as possible, and treated as follows:

Lot No. 1 was fed twice a day on dry ear-corn, care being taken never to give more than would be eaten clean before the next feed.

Lot No. 2 was fed in such a way that corn was constantly within reach.

Lot No. 3 was fed twice a day, on corn shelled and boiled until the kernels burst open.

Lot No. 4 was fed twice a day on corn-meal thoroughly scalded and slightly fermented.

Table No. 2 shows the weight of each lot at the beginning of the experiment; the amount of food consumed per week (allowing 68 pounds of ear-corn, or 56 pounds meal or shelled corn to the bushel); the gross increase of live weight, and the increase for each bushel of corn consumed for each lot, and for the average of the four lots, during each week of the experiment. The weights are given in pounds and hundredths; the corn in bushels and hundredths. A column showing the mean temperature for each week, as recorded by Edward Orton, Jr., is also appended:

TABLE No. 2.

Week ending—	Lot 1, weight 650.			Lot 2, weight 798.			Lot 3, weight 846.			Lot 4, weight 834.			Average gain per bushel.	Temperature.
	Gain.	Corn consumed.	Gain per bushel.	Gain.	Corn consumed.	Gain per bushel.	Gain.	Corn consumed.	Gain per bushel.	Gain.	Corn consumed.	Gain per bushel.		
January 26....	28	4.01	6.98	46	5.10	9.00	.....	4.75	.....	33	3.38	9.77	8.58	38.76
February 2....	30	3.83	7.83	26	3.83	6.79	.....	1.70	1.75	49	3.60	13.60	9.41	33.16
“ 9....	34	3.64	9.34	32	3.83	8.35	.....	3.53	12.40	56	4.11	13.62	10.93	29.71
“ 16....	32	3.50	9.70	40	4.00	10.00	.....	2.94	10.20	40	4.07	9.53	9.94	35.02
“ 23....	42	3.50	12.00	30	4.00	7.50	.....	3.62	11.00	52	4.11	12.40	10.72	45.04
March 2....	20	3.50	5.71	28	3.60	7.40	.....	3.41	8.21	40	4.30	9.30	7.75	36.38
“ 9....	28	3.38	8.28	30	3.30	9.10	.....	2.77	5.78	30	4.46	6.70	7.45	49.42
“ 16....	29	3.13	9.26	10	3.23	3.09	.....	3.00	9.33	62	4.21	12.35	8.51	55.44
“ 23....	27	2.94	9.18	30	2.72	11.03	.....	2.85	5.60	42	4.11	10.22	9.01	46.95
“ 30....	26	2.82	9.22	34	2.56	13.28	.....	3.17	4.41	20	4.28	4.67	7.89	44.85
April 6....	24	2.88	8.33	14	2.50	5.60	.....	2.94	11.56	48	3.93	12.21	9.42	53.04
“ 13....	30	2.78	10.79	12	2.48	4.84	.....	3.00	6.67	28	3.55	7.80	7.52	59.09
Totals.....	351	39.91	.....	342	41.15	.....	274	37.68	.....	490	48.12	.....	.....	.....
Averages....	29.25	3.33	6.79	28.5	3.43	8.31	22.83	3.14	7.27	40.83	4.01	10.18	8.70	.....

The result of this experiment can be seen more readily by separating it into periods of four weeks each, as in

TABLE No. 3.

Period.	Lot 1.			Lot 2.			Lot 3.			Lot 4.			Average gain per bushel.	Average temperature.
	Gain.	Corn consumed.	Gain per bushel.	Gain.	Corn consumed.	Gain per bushel.	Gain.	Corn consumed.	Gain per bushel.	Gain.	Corn consumed.	Gain per bushel.		
1	124	14.98	8.27	144	16.76	8.59	78	12.92	5.72	178	15.17	11.73	9.71	34.16
2	120	13.51	8.81	108	14.13	6.87	112	12.80	8.58	174	17.08	10.19	8.61	46.57
3	107	11.42	9.37	90	10.28	8.77	84	11.96	7.02	138	15.67	8.69	8.46	50.98
	351	39.91	8.79	342	41.15	8.31	274	37.68	7.27	490	48.12	10.18	8.70	

In Lot No. 1 we find a steady, though irregular, decrease in the rate of gain in live weight and in the weekly consumption of food as the animals approached maturity, but an *increase* in the amount of pork produced by a bushel of corn.

In Lot No. 2 we find a still more marked decrease in consumption of food and rate of gain in live weight, with a small gain in productiveness of the food.

Lot No. 3 apparently cloyed on the first feed given, and never afterward took kindly to their food, especially when fresh cooked. After it had begun to ferment they ate it better, but never seemed to enjoy it.

In Lot No. 4 we find a state of affairs almost the reverse of that in lots 1 and 2. The amount of food consumed per week increased until after the middle of the second period, while its productiveness steadily *decreased* from month to month.

It will be seen that the difference in productiveness between a bushel of dry ear-corn as fed to lot No. 1 and a bushel ground into meal and scalded as fed to lot No. 4 was only 1 39-100 pounds, a very small margin to pay for the expense of grinding and scalding, yet the hogs receiving the scalded meal made, *in the same length of time*, nearly forty per cent. more pork than those fed on unground corn.

The object of the peculiar method of feeding lot No. 2 was to inquire as to the danger of over-feeding, after hogs have once become accustomed to full feed. It will be seen that the difference in total gain and in the proportion of food utilized between lots 1 and 2 was very small.

Even this small difference, however, and even at the low price of three and a half cents per pound gross, for the pork, gives nearly two cents per bushel in favor of regular and careful feeding.

## 2. EXPERIMENTS WITH SOME CHEMICAL FERTILIZERS.

(a.) Twenty-four plots, each containing one-twentieth of an acre, were laid out in one of the oldest meadows of the farm, and the following fertilizers were applied to alternate plots on the 11th and 12th of April, in such a manner that each fertilized plot was surrounded by those unfertilized.

The fertilizers were used in two quantities, as shown below, the amounts being the rate per acre:

Superphosphate of lime .....	160 and 320 pounds.
Nitrate of soda .....	100 " 200 "
Mixture of above .....	160 " 320 "
Bone meal.....	100 " 200 "
Common salt .....	200 " 400 "

The grass was cut on Saturday July 6, and put into cock that evening; but on Sunday evening and all day Monday there were heavy showers of rain, so that it could not be got into condition to haul to the barn until Wednesday. It was carefully spread out that morning, and taken in during the afternoon. The results obtained are shown by the following table, which gives the rate of yield per acre for the manured plots and for the surrounding unmanured plots, the increase in yield for each fertilizer, the value of the increase and cost of fertilizer:

TABLE NO. 4.

Kind of Fertilizer.	Yield of manured plots.	Yield of unmanured plots.	Gain for fertilizer	Value of increase.	Cost of fertilizer.
Superphosphate .....	4140	3860	280	\$0 84	\$6 00
Nitrate of soda.....	5140	4460	680	2 00	7 50
Mixture .....	5060	4960	100	30	9 00
Bone meal .....	5000	4720	280	84	3 75
Common salt.....	5020	3980	1040	3 12	1 40

(b.) Forty plots, each containing one-thirtieth of an acre, were laid out in ten rows of four plots each, in one of the poorest field of the farm, and treated as follows :

On the first row stable manure was spread, at the rate of fifteen cords to the acre ; the land was then plowed, and swamp muck applied to two of the plots in the second row at the rate of sixty cords to the acre, and air-slacked lime to a third row at the rate of sixty and one hundred and twenty bushels per acre. The whole was carefully leveled and harrowed, and on the 18th of April planted with sugar beets, the seed being sown with a Comstock drill, in rows thirty inches apart, and at the rate of five pounds to the acre. The following fertilizers were immediately sown on the rows of alternate plots, each fertilizer except common salt being applied in two quantities :

Superphosphate of lime, at the rate of.....	180	and	360	lbs. per acre.
Nitrate of soda, at the rate of .....	150	"	300	"
Mixture of the above in equal quantities, at the rate of.	180	"	360	"
Bone meal, at the rate .....	150	"	300	"
Common salt.....	...		300	"

All the plots received as nearly as possible the same after culture.

The beets were harvested and weighed on the 19th and 26th of October, and the following table shows the rate of yield for each kind of fertilizer, that of the surrounding unmanured plots, the rate of gain and its value, and the cost per acre of application of fertilizer, as before :

TABLE NO. 5.

Kind of Manure.	Yield of manured plots.	Yield of unmanured plots.	Increase for manure.	Value of increase.	Cost of fertilizer per acre.
Stable manure.....	39,000	20,260	18,740	23 45	\$15 00
Swamp muck .....	26,340	20,260	6,080	7 60	15 00
Superphosphate .....	22,940	18,240	4,700	5 87	6 75
Nitrate of soda .....	30,800	19,280	11,520	14 40	11 25
Mixture.....	30,560	18,340	12,220	15 27	10 25
Bone meal .....	18,000	15,860	2,140	2 67	5 62
Common salt.....	24,900	14,760	10,140	12 67	1 40
Lime .....	18,440	17,260	1,100	1 37	3 60



It will be seen that the greatest actual increase came from the stable manure, while the greatest increase in proportion to cost of fertilizers came from the common salt.

The larger quantity of each fertilizer, except the lime, seemed to produce a larger increase of crop, but in no case, except that of the nitrate of soda, and the mixture of that and superphosphate was the additional increase sufficient to pay for the extra cost of the fertilizer. The larger application of lime was apparently injurious.

(c) By the side of the plots of beets a like amount of land was set apart for corn, receiving the same preparation as that devoted to the beets, except that it had an extra stirring with the cultivator just before planting time. It was planted on the 11th of May, with Clinton corn, the ground being marked both ways, and the corn dropped and covered by hand. The fertilizers were dropped upon the covered hills of corn in small handfulls, and the residue of each portion sown broadcast over the whole plot. The same quantities of fertilizers were used as in the previous experiment. The results are shown in the following table:

TABLE NO. 6.

Kind of Manure.	Yield of manured plots.	Yield of unmanured plots.	Increase for manure.	Value of increase.	Cost of fertilizer.
Stable manure .....	75.74	61.80	13.94	\$4 18	\$15 00
Swamp muck .....	77.91	61.00	16.91	5 07	15 00
Superphosphate .....	58.07	55.50	2.57	77	6 75
Bone meal .....	50.44	45.10	5.33	1 60	5 62
Common salt .....	61.50	57.10	4.40	1 32	1 40
Lime .....	64.15	57.93	6.22	1 86	3 60

The swamp muck used in these experiments was found on the farm, and was composed of the following constituents, as analyzed by Mr. J. S. Humphreys, a student at the University:

Water .....	59.131 per cent.
Organic matter .....	30.473 "
Silica .....	5.245 "
Lime, iron, and alumina .....	5.022 "

3. DEEP PLOWING FOR CORN AND BEETS.

(A) In a field of first and second bottom—the first bottom being a timothy sward which had recently been under cultivation, the second bottom an old pasture lot—a strip of land the width of twenty-four rows of corn was plowed twelve inches deep with a double plow drawn by four horses working abreast.

On each side of this strip the field was plowed eight inches deep with three-horse teams and single plows.

At husking time five shock-rows of twelve corn-rows each were carefully weighed, with the following results:

First row, south of deep plowing, yielded.....	63.24 bushels per acre.
Second row, deep plowed, yielded.....	77.64       “
Third row,       “       “       .....	76.50       “
Fourth row, north of deep plowing, yielded.....	71.44       “
Fifth row,       “       “       “       .....	74.88       “
Average yield for ordinary plowing .....	69.89       “
“       “       deep plowing.....	77.07       “

(B) In a field of bottom land which had been several years in cultivation, a strip the width of one shock-row was subsoiled about thirteen inches deep, by turning eight inches of the surface with an ordinary plow, and stirring five inches deeper with a subsoil plow. On each side of this strip the field was plowed eight inches deep with single plows. The result was as follows:

First row, west of subsoiled row, yielded .....	47.46 bushels per acre.
Second row, subsoiled, yielded.....	48.47       “
Third row, east of subsoiled row, yielded.....	54.69       “
Fourth row,       “       “       “       .....	57.69       “

(C) In a portion of second bottom two strips were subsoiled as above, the remainder of the field being plowed the usual depth. Across both strips sugar beets and corn were planted. The results were as follows:

(a) Beets—

Yield for ordinary plowing.....	8½ tons per acre.
Yield for subsoiling.....	9½       “

(b) Corn—

Yield for ordinary plowing.....	55.37 bushels per acre.
Yield for subsoiling .....	49.28       “

Respectfully yours,

C. E. THORNE.

COLUMBUS, OHIO, *November 15, 1878.*

S. H. ELLIS, Esq., *Chairman of Farm Committee Ohio State University:*

DEAR SIR: I have the honor to submit herewith a report of the management of the University Farm for the ten months ending November 15, 1878.

FARM CROPS.

The farm contains in all three hundred and twenty acres. Thirty-five acres are occupied by the main and secondary channels of the Olentangy River, twenty-one acres are at present contained in the University lawn, fifteen acres are in woodland, and twenty in the lots attached to the professors' houses, boarding halls, tenant houses, and barn lots, leaving two hundred and twenty-nine acres in pasturage and cultivation. Of this amount, ninety-four acres have been in meadow the past season, forty-six in pasture, forty-five in corn, twenty-five in wheat, thirteen in oats, four in potatoes, one in rye, and one in sugar beets.

The following is a detailed statement of the cost of culture and value of produce of each of the above crops:

CORN.

1. Twelve acres of the east end of No. 15 were planted with corn for the fourth consecutive season, the drainage of the muck bed in this field, not having been sufficiently accomplished to justify seeding it sooner. The account with the field is as follows:

*Dr.*

LABOR.	Hours of men.	Hours of team.	Cost.
Plowing and harrowing.....	114	114	\$28 50
Marking, planting, and replanting .....	46	16	7 75
Cultivating .....	103	66	24 12
Hoeing and thinning .....	90	.....	12 75
Cutting .....	123	.....	15 45
Husking .....	188	.....	23 60
Hauling to crib.....	30	30	7 50
Total cost.....	594	226	\$119 67

*Cr.*

555 bushels corn, at 28c.....	\$155 40
250 shocks fodder (12 hills square), at 7c.....	17 50
Total return.....	\$172 90
Value above cost .....	53 23
Net profit per acre.....	4 42
Net cost per bushel .....	18 4-10
(Obtained by deducting value of fodder from total cost of crop.)	

2. *Field No. 3.*—This field was in corn last year. Five and one-half acres were devoted to experimental plots and to potatoes. The following is the account with the remaining eight and one-half acres:

Dr.

LABOR.	Hours of men.	Hours of team.	Cost.
Plowing, harrowing, and planting.....	130	118	\$31 00
Cultivating .....	87	87	22 28
Hoeing .....	68	.....	8 42
Cutting .....	86	.....	10 78
Husking .....	117	.....	14 60
Hauling to crib.....	28	28	7 00
Total cost.....	516	233	\$94 08

Cr.

450 bushels corn, at 28c .....	\$127 00
180 shocks fodder, at 7c .....	12 60
Total return.....	\$139 60
Value above cost .....	45 52
Net profit per acre.....	5 35
Net cost per bushel .....	18 1-10

3. *Field No. 14.*—Two irregular patches, containing together seven and one-half acres, were cultivated on the island, with the following results:

Dr.

LABOR.	Hours of men.	Hours of team.	Cost.
Clearing, plowing, and harrowing.....	103	100	\$25 37
Marking, planting, and replanting .....	53	22	9 38
Hoeing and thinning .....	61	.....	9 25
Cultivating .....	85	77	21 10
Harvesting.....	210	40	31 25
Total cost.....	512	239	\$96 35

Cr.

495 bushels corn, at 28c.....	\$138 60
160 shocks fodder, at 7c.....	11 20
Total return.....	\$149 80
Value above cost .....	53 45
Net profit per acre .....	7 13
Net cost per bushel .....	17 2-10

4. *Field No. 11.*—Eleven acres of this field were of first bottom, which had been in grass one season, but was not well set; six acres were an old, upland pasture lot.

*Dr.*

LABOR.	Hours of men.	Hours of team.	Cost.
Plowing and harrowing .....	162	195	\$44 62
Planting and re-planting .....	53	25	11 00
Rolling .....	23	30	6 62
Cultivating .....	84	84	22 55
Hoeing and thinning .....	125	.....	21 83
Cutting .....	173	.....	21 60
Husking .....	288	.....	36 00
Hauling to crib .....	70	70	17 50
Total cost .....	978	404	\$181 72

*Cr.*

1,200 bushels corn, at 28c .....	\$336 00
355 shocks fodder, at 7c .....	24 85
13 tons pumpkins, at \$2.00 .....	26 00
Total return .....	\$386 85
Value above cost .....	205 13
Net profit per acre .....	12 06
Net cost per bushel .....	10 9-10

#### WHEAT.

1. Twelve and three-fourths acres of the west half of field No. 10, bottom land, had been sown with Clawson wheat on the 17th of September, 1877, following oats. The wheat was cut on the 1st and 2d of July. The cost and return were as follows:

*Dr.*

LABOR.	Hours of men.	Hours of team.	Cost.
Plowing .....	114	114	\$34 25
Manuring .....	127	50	24 68
140 loads manure, at 25c .....	.....	.....	35 00
Stirring and harrowing .....	48	48	14 25
Drilling .....	15	15	4 50
16½ bushels seed, at \$1.75 .....	.....	.....	30 44
Harvesting .....	205	37	38 17
Threshing .....	200	78	43 56
Expense of threshing .....	.....	.....	22 64
Cleaning and marketing .....	119	14	16 62
Total cost .....	828	356	\$264 11

Cr.

444 bushels wheat .....	\$462 50
25 tons straw .....	37 50
One-third cost of manuring, charged forward .....	19 89
Total return .....	\$519 89
Value above cost .....	255 78
Net profit per acre .....	20 06
Net cost per bushel .....	46

2. Eleven and one-fifth acres of the west half of field No. 15, bottom land, had been sown with Lancaster wheat on ten acres, and Golden Straw and Silver Chaff on two-fifths of an acre each, on the 24th of September, 1877, following corn. The cost and return of the crop were as follows:

Dr.

LABOR.	Hours of men.	Hours of team.	Cost.
Cultivating and harrowing .....	37	37	\$11 10
Drilling .....	15	15	4 50
17 bushels cleaned seed, at \$1.27 .....			21 55
Harvesting .....	20	45	42 41
Threshing .....	305	130	69 18
Expense of threshing .....			12 80
Marketing .....	30	10	5 60
Total cost .....	607	237	\$167 14

292 bushels wheat .....	\$250 72
22 tons straw .....	33 00
Total return .....	\$283 72
Value above cost .....	116 58
Net profit per acre .....	10 41
Net cost per bushel .....	46

3. Four-fifths of an acre in the farm-house lot was sown with Velvet Chaff wheat on the 1st of October, and harvested June 25th.

LABOR.	Hours of men.	Hours of team.	Cost.
The total cost was .....	64	31	\$17 00
The total product was .....			19 25

Making a total yield of 756 bushels from 24½ acres; an average of 30½ bushels, or 26 bushels after corn, and 34 4-5 bushels after oats.

## OATS.

Nine acres of the east half of field No. 7 (upland sod) were plowed during the winter, and sown with oats on the 22d and 23d of March; four acres of the lawn north of the College buildings were sown April 13th. Both lots were stacked and threshed together. The account with this crop is as follows:

*Dr.*

LABOR.	Hours of men.	Hours of team.	Cost.
Plowing and harrowing .....	130	130	\$36 50
Drilling .....	17	17	4 85
30 bushels cleaned seed .....			9 75
Stacking .....	88	29	14 62
Threshing .....	106	8	16 65
Expense of threshing (machine, board, and coal) .....			14 52
Total cost .....	341	184	\$96 89

*Cr.*

525 bushels oats, at 20c .....	\$105 00
13 tons straw, at \$1.50 .....	19 50
Total return .....	\$124 50
Value above cost .....	27 61
Net profit per acre .....	2 12½
Net cost per bushel .....	14½

## RYE.

Four-fifths of an acre in field No. 15 (corn land) was sown with rye on the 25th of September. The cost and return were as follows:

*Dr.*

LABOR.	Hours of men.	Hours of team.	Cost.
Plowing, sowing, and harvesting .....	32	16	\$6 65
Value of seed .....			75
Threshing by hand .....	65		8 17
Total cost .....	97	16	\$15 57

*Cr.*

28 bushels rye, at 50c .....	\$14 00
10 dozen bundles straw, at 50c .....	5 00
Total return .....	\$19 00

SUGAR BEETS.

The beets were grown as an experiment, and are reported as such to the Professor of Agriculture.

POTATOES.

A portion of the potatoes was grown for the purpose of testing the effect of different fertilizers, but the experiment was lost through defective seed. Another portion was planted among the large trees in field No. 3. Consequently no figures can be given which will be of any value.

MEADOWS.

Ninety-four acres were in meadow, but about five acres were completely taken with "White top," in field No. 6, and several of the other fields were more or less injured by it, while in some of the fields the timothy had been almost driven out by blue grass.

The account with the meadow is as follows :

Dr.

LABOR.	Hours of men.	Hours of team.	Cost.
Manuring No. 7 in fall of 1877 .....	142	60	\$28 50
110 loads manure at 25c .....			27 50
Reseeding and sowing plaster in No. 6.....	11	7	3 57
Harvesting .....	1650	544	339 65
Total cost.....	1803	611	\$399 22

Cr.

150 tons hay, at \$5.00 .....	\$750 00
Pasturage of aftermath .....	125 00
One-third cost of manuring, charged forward.....	18 66
Total return .....	\$893 66
Value above cost .....	494 44
Net profit per acre .....	5 26
Net cost of hay per ton .....	1 70

PERMANENT PASTURES.

1. Nos. 1 and 2, containing thirty acres, were pastured together. Their yield has been as follows :

Keeping 3 three-year old steers 6 months, at \$1.50.....	\$27 00
“ 8 two-year old “ 7 “ \$1.00.....	56 00
“ 7 yearling steers and heifers 7 months, at 75 cents .....	36 75



Keeping 5 winter calves 5 months, at 40 cents.....	\$10 00
“ 4 April calves 3 months, at 30 cents .....	3 60
“ 1 heifer 3 months, at \$1.00.....	3 00
“ 2 horses 2 months, at \$2.00.....	8 00
“ 104 sheep ½ month, at 10 cents.....	3 46
Half pasture for 3 horses 8 months, at \$1.00.....	24 00
<hr/>	
Total returns.....	\$171 81
Return per acre .....	5 72

These figures include the November pasturage. The prices are based upon the increase in weight of the cattle while on the pasture. A large per cent. of the product of No. 2 was lost for want of stock to consume it at the proper time.

2. No. 8.—One acre of this field was set off for use of Boarding Hall. the return of the remaining sixteen acres was as follows:

Keeping 10 cows 5½ months, at \$1.50.....	\$82 50
“ 1 cow 2½ months, at \$1.50 .....	3 75
Night pasture for 6 horses 5 months, at 50 cents .....	15 00
“ “ 110 sheep 2½ months, at 2 cents .....	5 00
Pasturing 30 hogs, partly corn-fed, at 6½ cents .....	10 00
<hr/>	
Total return.....	\$116 25
Return per acre .....	7 26

The principal results obtained from the cultivation of the above crops are shown in the following

SUMMARY OF CROPS.

KIND OF CROP.	Acres.	Average yield.	Total yield.	Total value.	Total cost.	Cost per acre.	Profit p'r acre.
Corn .....	45	60 bush.	2700 bush.	\$849 15	\$491 82	\$10 93	\$8 06
Wheat .....	25	30 “	756 “	822 86	448 25	17 42	15 04
Oats .....	13	40 “	525 “	124 50	96 89	7 45	2 12
Hay .....	94	1 6-10 tons.	150 tons.	893 66	399 22	4 24	5 26
Pasture.....	46	.....	.....	288 06	.....	.....	6 74
Minor crops.....	6	.....	.....	140 00	140 00	.....	.....
Totals and avg's..	229	.....	.....	\$3,118 23	\$1,576 18	\$10 01	\$7 44

To the direct cost of production, as given above, should be added the sum of \$292.38 for general farm expenses, such as repairs of fences, marketing such of these crops as have been sold, care of stock, etc., making a total outlay of \$1,868.56, and leaving a balance for profit and superintendence of \$1,249.67.

## DAIRY.

The following summary shows the operations of the dairy department of the farm from April 1 to November 1 :

<i>Dr.</i>	
7 cows and heifers on hand April 1 .....	\$305 00
3 calves on hand April 1 .....	15 00
Utensils on hand April 1 .....	8 00
1 bull purchased .....	80 00
5 cows purchased .....	285 00
4 calves purchased .....	12 50
Utensils purchased .....	8 30
Keeping bull 5½ months, at \$3.00 .....	16 50
Pasturing cows 65 months, at \$2.00 .....	130 00
Milking and marketing .....	183 30
Use of horse 7 months, at \$3.00 .....	21 00
<b>Total .....</b>	<b>\$1,064 60</b>

<i>Cr.</i>	
12 cows on hand November 1 .....	\$610 00
1 bull on hand November 1 .....	80 00
5 calves on hand November 1 .....	34 00
Utensils on hand November 1 .....	15 80
1,154 gallons milk sold .....	231 92
610 gallons skim milk fed to pigs .....	18 30
145 pounds butter sold .....	21 22
8 calves .....	94 00
Bull services .....	9 00
<b>Total .....</b>	<b>\$1,115 24</b>

These seven months include the summer vacation, during which the sales of milk were reduced one-half. The profits of the dairy are chiefly to be found in the incidental items of the production of good calves to keep up our stock of cattle, in the profitable marketing of the pasturage and rough feed of the farm, in the additions to the manure heap, and in the profitable employment of a considerable amount of student labor.

## FARM IMPROVEMENTS.

Between April 1, 1877, and November 1, 1878, there has been a total expenditure for material for farm improvements of \$1,097.47. The labor of the farm, inclusive of teams, has been applied to the construction of these improvements to the amount of \$1,049.24, making a total cost of \$2,146.71.

The following is a detailed statement of the purposes for which the above sums have been expended :

1. A piggery, containing corn cribs and wagon shed, was erected west of the barn at a cost—

For material .....	\$280 00
For labor .....	138 43
Total .....	<u>\$418 43</u>

This building is 20x61 feet in size, contains seven pens 8x10 feet, and one 5x8 feet, with yards attached, has crib room for 1,200 bushels of corn, besides meal bins, feed-rooms, etc.

2. A work-shop and tool-house, 18x30 feet in size, two stories high, was added to the barn, in the form of a wing, costing—

In material.....	\$190 55
In labor.....	122 00
Total .....	<u>\$312 55</u>

3. A substantial bridge was made across the brook in the barn-lot, costing—

In material .....	\$20 00
In labor.....	83 48
Total .....	<u>\$103 48</u>

It was necessary to straighten the brook, which involved considerable extra labor in digging and filling.

4. The stabling in the basement of the barn was very inconveniently arranged, and only capable of accommodating seven or eight head of cattle. The old stalls were torn out, new floors laid, the feed-room doubled in size, a new box made for the bull, a lean-to erected in one of the angles of the barn, making a room 16 by 18 feet in size for young calves, etc., and additional stalls put in, making room for seventeen cows, besides bull and calves. The cost of this change has been—

In material .....	\$51 80
In labor.....	35 97
Total .....	<u>\$87 77</u>

5. A coal-shed was added to the farm-house costing—

In material.....	\$21 55
In labor.....	14 30
Total .....	<u>\$35 85</u>

## 6. A hen-house was built at the barn costing—

In material .....	\$13 00
In labor.....	5 50
Total .....	<u>\$18 50</u>

7. The road from the barn to the extension of Neil avenue was graded and graveled, and paths made in other places, at a cost in labor of \$63.30.

8. Labor was expended in the grading and improvement of Woodward avenue to the amount of \$29.55.

9. One hundred and fifty-two rods of tile drains were made in the south-east field of the farm at a cost—

For tile of .....	\$71 50
For labor.....	77 50
Total .....	<u>\$149 00</u>

10. A system of tile drains of an aggregate length of 135 rods was made in the north-eastern part of the farm, beginning in the field north of the President's house, and extending through the field between that house and the University buildings and the eastern side of the lawn. This improvement cost—

In tile .....	\$83 70
In labor.....	88 20
Total .....	<u>\$171 90</u>

Thirty-five and a half rods of this drain were laid with eight-inch tile through a stony slope where the digging was very difficult.

11. The drains in the south-west portion of the farm were found insufficient to accomplish the purpose for which they were made, owing to the flow of water being greater than was anticipated. The outlet had been also obstructed by the roots of trees penetrating the joints between the tiles. Fifty rods of six-inch tile were taken up (for a portion of the distance from under six to eight feet of earth), the drain was dug deeper and relaid with eight inch tile, the portion which had been obstructed by roots being laid with glazed socket tiles, and the joints cemented. Seventy-seven rods of laterals were also made, being dug from four to six feet deep, in order to sink the tiles to the bottom of the stratum of gravel which was carrying the water under the old tiles and into the muck bed. This improvement cost—

In tile .....	\$95 55
In labor.....	115 11
Total .....	<u>\$210 66</u>

12. Two hundred and ten rods of new board fence have been built; three more boards have been added to ninety rods of two-board fence ;

e hundred rods of rail fence have been re-set and staked; three substantial water-gates have been made in the barn lots, and seven new gates made for other parts of the farm. These improvements have cost—

material.....	\$233 07
labor.....	128 80
Total .....	<u>\$361 87</u>

13. An ice-room was constructed in one end of the barn cellar costing—

material .....	\$19 00
labor.....	14 63
Total .....	<u>\$33 63</u>

One-half of this improvement is chargeable to the University.

14. A milk-room was made in one end of the farm-house cellar which cost—

material.....	\$17 75
labor .....	25 70
Total .....	<u>\$43 45</u>

15. Labor has been expended in minor improvements as follows:

digging stumps.....	\$5 50
gathering stones from the fields .....	12 24
improving water-courses.....	16 62
filling washouts .....	34 25
transplanting trees.....	11 70
miscellaneous items .....	26 46
Total .....	<u>\$106 77</u>

SUMMARY OF RECEIPTS AND EXPENDITURES FROM JANUARY 1, TO OCTOBER 31, 1878.

Receipts.

from 1 horse sold .....	\$35 00
' 13 cattle sold.....	586 19
" 43 hogs " .....	441 36
' 102½ bushels corn sold.....	39 42
' 278 " oats " .....	71 23
' 719½ " wheat sold.....	685 45
' 59 1-5 " potatoes sold.....	24 28
' 131½ tons hay " .....	1,345 60
' 1608 gallons milk " .....	332 19
' 149 pounds butter " .....	21 70
' pasture and feed " .....	60 50
' rents and miscellaneous sales .....	197 00
' from University Funds .....	1,426 14
Total receipts .....	<u>\$5,299 68</u>

*Expenditures.*

For 1 draft mare and colt purchased.....	\$200 00	
“ 4 calves purchased .....	12 00	
“ 13 pigs “ .....	60 00	
“ implements “ .....	309 87	
“ materials for permanent improvements purchased.....	641 03	
“ current expenses (including superintendence, pressing and shipping of hay, threshing of grain, and all cash expenses of marketing crops).....	1,641 90	
For student labor employed.....	835 29	
“ other labor “ .....	1,497 88	
Balance on hand .....	101 71	
		<hr/>
Total expenditures .....		\$5,299 68
To the amount paid for labor as above, \$2,233.17, should be added amounts due on accounts, \$108.02.....	\$2,441 19	
Value of labor expended in preparation for crops of 1878 previous to November 1, 1877 .....	116 00	
Value of labor of farm teams for year .....	686 81	
		<hr/>
Total .....		\$3,244 00

This amount has been expended as follows :

In care of lawn, and other work for the University .....	\$213 68	
In construction of permanent improvement.....	336 92	
In work for private parties, paid in cash and produce .....	120 69	
In expenses connected with crops of 1877 .....	345 08	
“ “ “ 1878 .....	292 38	
In direct production of crops of 1878 .....	1,576 18	
In preparation for crops of 1879.....	359 07	
		<hr/>
Total .....		\$3,244 00

The farm is under obligations to the following persons and firms for favors:

To Charles S. Burns, Cincinnati, Ohio, apparatus for heating water and cooking food for stock.

To Whiteley, Fassler & Kelly, Springfield, Ohio, 25 per cent. off price of New Champion Mower.

To P. P. Mast & Co., Springfield, Ohio, exchange of grain drills.

These implements have all been used with the greatest satisfaction.

The foregoing is respectfully submitted.

C. E. THORNE, *Farm Manager.*

# RECORD OF PROCEEDINGS

OF THE LAST MEETING OF THE BOARD OF TRUSTEES OF THE AGRICULTURAL AND MECHANICAL COLLEGE.

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COLUMBUS, OHIO, *November 21, 1877.*

This day the Board of Trustees of the Ohio Agricultural and Mechanical College met at 10 o'clock A.M.

On calling the roll, the following members were found to be present, to-wit: Gaither, Kinsinger, Schneider, Deuel, Jones, Noble, Sullivant, Glazier, Cornell, Horr, Ensign, and Streator—12.

Absent—Falconer, Finley, Scott, Leete, Caldwell, Mackey, Jamison, and Hoover—8.

A quorum being present, the Board was called to order.

The Secretary presented the annual reports of the Trustees, Treasurer, President, and Professors for consideration.

On motion, the Board adjourned to meet at half-past one o'clock P.M., in the portrait room of the Governor's office.

## AFTERNOON SESSION.

Board met at half-past one o'clock P.M., and was called to order, the same members present as in the morning, with the addition of Messrs. Jamison and Scott. Most of the afternoon was spent in reading and examining the reports.

At three o'clock P.M. it was resolved to go into an election of officers of the Board for the ensuing year. Tellers were appointed, and the ballots having been collected and counted it was found that Warren P. Noble was duly elected as President of this Board for the ensuing year, Joseph Sullivant, Secretary, for one year, and Henry S. Babbitt, Treasurer. There were likewise elected, in the same manner, and for the term of one year, the following members of the Executive Committee, to wit: T. C. Jones, A. C. Deuel, Harmon Hoover, W. S. Streator, J. Sullivant, and C. Kinsinger. E. F. Ensign and J. C. Jamison were elected a committee on the Farm and Farm Management.

On motion of T. C. Jones, it was

*Resolved*, That to allow the Professor of Agriculture to devote his time to the proper duties of his department, he be relieved from all services in the management of the farm and the keeping of accounts, and all other matters in relation to the same, except the supervision of farm experiments, and that the farm be conducted by Mr. Thorne (now employed as foreman on the farm), subject to the direction of the committee on Farm Management, and Executive Committee.

This resolution being seconded, was duly put and carried in the affirmative, as was also the following :

*Resolved*, That Mr. Thorne, as Farm Manager, receive a compensation for his services, as defined by the above resolution, the sum of six hundred dollars (\$600) per annum, and the use of pasture for horse and cow. The increased compensation to be given from the first of January next.

The Board then took a recess until half-past seven o'clock, P.M.

#### EVENING SESSION.

Board met at 7½ o'clock P.M., and a quorum being present, proceeded to business. Mr. Sullivant having made statements and submitted testimonials in favor of Mr. Church, offered the following :

*Resolved*, That John A. Church, Mining Engineer, be and he is hereby appointed Professor of Mines, Mine Engineering, and Metallurgy in the Ohio Agricultural and Mechanical College, at the same rate of yearly compensation as the other Professors in the College, and that his term of service date from November 1st, 1877.

The yeas and nays having been demanded, those voting in the affirmative were, Kinsinger, Schneider, Hoover, Deuel, Jones, Noble, Sullivant, Glazier, Jamison, Cornell, Horr, Ensign, and Streator—13. In the negative, none.

So the resolution was carried, and Mr. Church appointed to the vacancy caused by the death of Mr. Henry Newton.

On motion of T. C. Jones, which was carried in the affirmative, the following was adopted as one of the by-laws :

*By-law*. There shall be appointed by the President, at each annual meeting of the Board, a Committee on Finance, to consist of three members, who shall have charge of and report upon such matters as the Board may from time to time refer to the same, and shall also recommend, as in the judgment of said committee may be expedient, any measure that they may deem essential to the pecuniary interests of the College.

The report of the proceedings of the Executive Committee, ad interim, of the Board, were now read. Whereupon Mr. Cornell moved the following, which was adopted :

*Resolved*, That the proceedings of the Executive Committee, so far as reported, be and are hereby approved.

On motion, duly put, and carried in the affirmative, it was

*Resolved*, That members of the Faculty shall report at the end of each term the number of days they may have been absent from duty at the College, and the reason for such absences ; such report to be made to the Secretary for their information.

On motion of Mr. Cornell, it was

*Resolved*, That the fees of students be required to be paid in advance, and that the receipt of the treasurer for the dues of the current term must be furnished by the stu-



dents to the President, before their names are entered upon the roll of students, or are admitted to the privileges of the College.

On motion of Mr. Cornell, duly put, and decided in the affirmative, it was

*Resolved*, that section five of the by-laws be so amended as to require of the treasurer a bond in the sum of fifty thousand dollars (\$50,000), instead of \$30,000.

On motion of Mr. Sullivant, duly put, and decided in the affirmative, it was

*Resolved*, That the following be added to the by-laws, to wit: *By-law*. It shall be the duty of the Secretary to prepare the annual report of this Board and submit it for approval and adoption at their annual meeting.

The following resolution of the College Faculty was received and laid before the Board.

At a meeting of the College Faculty, held on November 14, 1877, the following action was taken :

*Resolved*, That in our judgment the best interests of the College demand that the elements of algebra shall be included in the entrance examination, and that we do therefore unanimously and urgently request the Board of Trustees to restore this subject to the requirements for admission.

(Signed)

J. R. SMITH, *Secretary*.

*College, Nov. 14, 1877.*

After discussion, Mr. Cornell offered the following, which was adopted:

*Resolved*, That the "elements of algebra" be restored to the requirements made of students for admission to the College.

On motion of Mr. Sullivant, duly seconded and put, it was

*Resolved*, That the sum of twenty-five thousand dollars (\$25,000) be and is hereby appropriated from the income fund of the Ohio Agricultural and Mechanical College in the State Treasury, for the support and maintenance of said College.

At eleven P.M. the Board adjourned until half-past eight A.M. tomorrow.

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COLUMBUS, November 22, 1877.

Board met at 8½ A.M., the following members being present, to wit: Schneider, Scott, Hoover, Deuel, Jones, Noble, Sullivant, Glazier, Jamison, Cornell, Horr, Ensign, and Streater—13. A quorum being present, the Board proceeded to business.

In order to bring the benefits of the College within reach of a class of persons, especially young farmers and mechanics who are unable or indis-

posed to take a full course in College, the matter was talked over by the Faculty and Resident Trustees, and the Faculty proposed to submit a scheme for the approval and action of the Board at their annual meeting at this time. Accordingly the following scheme of the Faculty was submitted to the Board :

The scheme proposes that young men eighteen years of age and over shall be admitted to the College next term, without any examination and without being subject to military drill, to attend lectures to be delivered as follows : One each day from Professors Townshend and Tuttle ; two each week from Professors Orton, Mendenhall, and McFarland, and to continue through the term. Those entering the class will be subject to College regulations, and will be required to pay the five dollar incidental fee. Finally, the establishment of the course will depend on thirty students being found ready to undertake it, and that provision be made by the Board for advertising "the course."

The matter was discussed, and Mr. Sullivant offered a resolution, which after being amended, read as follows :

*Resolved*, That the above scheme of the Faculty, submitted for the consideration of the Board, is hereby approved and referred back to the Faculty, with authority to perfect the details and carry it into practical effect, provided that no other expenses be incurred than those mentioned in the communication of the Faculty.

This resolution was decided in the affirmative in due form.

The President of the Board now appointed the following persons as members of the Committee on Finance, to serve during the ensuing year to wit: Cornell, Hoover, and Gaither.

On motion, the clause concerning the Assistant Secretary and his salary was stricken from the by-laws.

On motion of Mr. Streator,

*Resolved*, That the report prepared by the Secretary is hereby approved and adopted as the Seventh Annual Report of this Board.

On motion of Mr. Noble, it was

*Resolved*, That the Secretary be requested to remind the professors of the requirement for an inventory of property in their several departments, and request the filing of such inventory with him by January first, 1877.

On motion of T. C. Jones, it was

*Resolved*, That the resolution or order of this Board, made June 22, 1876, authorizing the current expenses incurred in searching out and reclaiming the Virginia Military Lands to be paid out of the fund derived from the sale thereof, etc., be and the same hereby repealed.

On motion of T. C. Jones, it was

**Resolved,** That the compensation of Captain C. A. Barton, as agent for the care and sale, and all services in relation to the same, of the Virginia Military Lands, be fixed at sixty dollars (\$60) per month, beginning with the time that he was engaged by the Executive Committee.

**Resolved,** That the Board will indemnify and save harmless President Orton and Professor Townshend, as sureties on the bond on behalf of the Board, for the safe keeping of the arms and other property of the United States that shall be in the control and use of the College, for all losses and expenses they may incur on account of such suretyship.

On motion of T. C. Jones, it was

**Resolved,** That the sum of two thousand dollars (\$2,000) be appropriated to pay for drainage, farm buildings, and other improvements on the farm that may be made by the Executive Committee.

On motion of Mr. T. C. Jones, it was

**Resolved,** That the Executive Committee be requested to settle all matters connected with the contract of William H. Leete in regard to the discovery, sale, etc., of the Virginia Military Lands, with authority to compromise all claims arising under the same against the Board by the payment of such a sum as they may deem expedient, so as to relieve the Board from all obligations on account of said contract and services rendered under the same.

On motion of T. C. Jones, it was

**Resolved,** That the Executive Committee be authorized, at their discretion, to provide assistants in the departments of Chemistry and Physics, to be engaged in making practical analyses and other work of original research that will be of public interest and value: provided, there be money in the Treasury available for that purpose.

At one o'clock P.M. the Board adjourned *sine die*.

(Signed)

WARREN NOBLE, *President*.

# RECORD OF PROCEEDINGS

OF THE BOARD OF TRUSTEES OF OHIO STATE UNIVERSITY.

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COLUMBUS, OHIO, *May* 16, 1878.

All the members of the new Board of Trustees of the Ohio State University met this day in the Governor's office, there being present James B. Jamison, of Cadiz, Harrison county; S. H. Ellis, of Springborough, Warren county; J. H. Anderson and T. Ewing Miller, of Columbus, Franklin county; T. J. Godfrey, of Celina, Mercer county; Stephen Johnston, of Piqua, Miami county, and Alston Ellis, of Butler county.

The Governor presented their commissions, with the terms of their appointment, as follows: James B. Jamison for one year, S. H. Ellis for two years, Stephen Johnston for three years, T. J. Godfrey for four years, Alston Ellis for five years, T. E. Miller for six years, and J. H. Anderson for seven years, after which they were sworn into office.

On motion of Alston Ellis, Stephen Johnston, of Miami county, was made temporary President.

Alston Ellis, of Butler county, was made temporary Secretary.

Mr. Miller, in behalf of Lieutenant Luigi Lomia, Professor of Military Tactics in the University, presented an invitation for the Board to visit the College building in a body, to witness the military drill at 11 o'clock.

The invitation was accepted, and the Board at once proceeded to the University grounds, and spent the remainder of the forenoon in witnessing the drill and in visiting several of the class rooms.

After inspecting the University building, the Board met in the room of the President of the institution, and afterwards adjourned to meet at the University at 3 o'clock in the afternoon.

## AFTERNOON SESSION.

Pursuant to adjournment, the Board met promptly at 3 o'clock P.M., all the members in attendance.

H. S. Babbitt, Treasurer of the former Board, being present, was called upon to furnish some information regarding the finances of the Univer-

sity. J. Sullivant, Secretary of the former Board, also gave much information regarding the general management of the institution the past years.

The remainder of the session was occupied in listening to verbal reports of Dr. N. S. Townshend, Professor of Agriculture, and Mr. Thorne, Farm Superintendent.

After deciding to visit the College classes at 9½ o'clock, May 17, the Board adjourned to meet at the American Hotel at 8 o'clock P.M.

#### EVENING SESSION.

The Board met in the parlors of the American Hotel at 8 o'clock, as per adjournment.

On motion, it was determined to proceed to the election of a President, Executive Committee, Farm Committee, and Finance Committee.

On motion made and carried, each of the committees of the Board was made to consist of three members.

On calling the roll, the President declared that T. J. Godfrey was duly elected President of this Board for the ensuing year.

The following standing committees were then put in nomination and unanimously elected:

*Executive Committee.*—J. H. Anderson, T. Ewing Miller, and Stephen Johnston.

*Farm Committee.*—S. H. Ellis, James B. Jamison, and J. H. Anderson.

*Finance Committee.*—T. Ewing Miller, Alston Ellis, and Stephen Johnston.

On motion of Mr. Anderson, the President or Executive Committee was authorized to call a meeting of the Board of Trustees at any time when, in the judgment of either, such meeting was necessary to advance the interests of the University.

A communication from William Colvin was read, reciting that he was formerly Professor of Political Economy in the Ohio Agricultural and Mechanical College, and was illegally removed, while in the active discharge of his duty, by a former Board of Trustees.

The communication was laid on the table.

On motion of Mr. Johnston, it was

*Resolved,* That the position of Secretary of this Board be tendered to J. Sullivant for the remainder of this fiscal year, at an annual salary of five hundred dollars (\$500).

Mr. Ellis, of Butler county, called for the ayes and noes on the above resolution. The vote so taken resulted as follows:

*Ayes.*—T. J. Godfrey, T. Ewing Miller, J. H. Anderson, S. H. Ellis, and Stephen Johnston—5.

*Noes.*—James B. Jamison and Alston Ellis—2.

The Secretary announced that five votes had been cast in favor of the motion, and two against it; whereupon the President declared the motion carried.

On motion, it was

*Resolved*, That when this Board adjourns, it be to meet at the University building tomorrow morning at 9½ o'clock.

On motion, the Board adjourned.

(Signed)

ALSTON ELLIS, *Secretary pro tem.*

Read and approved.

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UNIVERSITY BUILDING, COLUMBUS, *May* 17, 1878.

Pursuant to adjournment, the Board reassembled at the University building at 9½ o'clock A.M.

The whole of the forenoon was spent in visiting University classes, inspecting the building and apparatus, and in going over the farm.

The Board met for the transaction of business in the room of the President of the University at 2 o'clock P.M., all the members in attendance.

On motion of Mr. Johnston, it was decided to elect a Treasurer for the remaining fiscal year.

On motion, the salary of the Treasurer to be elected was fixed at the rate of \$400 per annum, and his bond was fixed at \$50,000, the same to be satisfactory to the Executive Committee of this Board.

On a call of the roll, Messrs. Godfrey, Johnston, Jamison, Miller, S. H. Ellis, and Alston Ellis voted for H. S. Babbitt.

The Secretary announced that H. S. Babbitt had received six of the seven votes cast for Treasurer, whereupon, the President declared Mr. Babbitt to be duly elected to serve for the remainder of the present fiscal year.

The following resolution was offered by Alston Ellis, and was unanimously adopted:

*Resolved*, That all employes now engaged in the service of this Board be retained in their present positions until the next meeting of the Board of Trustees.

On motion of Mr. Alston Ellis, it was

*Resolved*, That the Executive Committee of this Board be authorized, in their discretion, to put the building known as the "Club House," in a thorough state of repair at the earliest practicable moment, at an expense not exceeding \$300, with the view of leasing the building for the ensuing year.

On motion of Alston Ellis, it was

*Resolved*, That the President of the Faculty is hereby authorized, with the approval of the Executive Committee, to expend any sum not in excess of \$150 in providing for

the annual commencement of the University in June next, and in securing suitable diplomas for the members of the graduating class.

On motion of Stephen Johnston, it was

*Resolved*, That the rules and regulations heretofore in force for the discipline of the institution be continued during the remainder of the present college year.

It was moved and carried, that when the Board finally adjourns it be to meet on June 18th, at 8 o'clock P.M.

After an informal interchange of views on matters connected with the interest of the University, the Board adjourned until the time previously determined upon.

T. J. GODFREY, *Pres't of Board*.

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COLUMBUS, June 18, 1878.

The Board of Trustees of the Ohio State University met this day at 8 o'clock P.M., according to previous adjournment.

The following members were present, to wit: Messrs. Godfrey, Alston Ellis, Johnson, Miller, S. H. Ellis, and Anderson.

A quorum being present, President Godfrey called the Board to order, and announced it as ready for business.

The Secretary presented bound volumes, for the use of the members, containing the annual reports of the Trustees of Ohio Agricultural and Mechanical College, and asked permission to complete the series; when, on motion of Mr. Jamison, it was

*Resolved*, That the Secretary is authorized to complete the record by printing the proceedings of the last meeting of the Board of Trustees of the Ohio Agricultural and Mechanical College.

A draft of by-laws was presented and read; when, on motion, it was

*Resolved*, That this whole matter be referred to Messrs. Alston Ellis, Godfrey, and Johnston, to examine, revise, and report to the Board at an early day.

Board adjourned until 9 o'clock to-morrow.

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COLUMBUS, June 19, 1878.

The Board met pursuant to adjournment.

On motion, duly put and carried, it was

*Ordered*, That the Secretary is hereby instructed to notify Mr. Walter Turner that his lease of the College boarding house will not be renewed, and that he is required to surrender possession of the same to the Board.

On motion of Mr. Jamison, it was

*Ordered*, That the Secretary notify Mr. Charles E. Thorne that he will be continued in his present position and management until the first of April next.

Accounts of Mr. Francis Collins, administrator of George W. Weinman, deceased, were presented as due from the Ohio Agricultural and Mechanical College.

Said accounts were referred to the Executive Committee.

On motion of Mr. S. H. Ellis, it was

*Ordered*, That the bill of T. C. Jones, for fifty dollars (\$50) be paid by the Secretary.

On motion of Mr. Alston Ellis, it was

*Ordered*, That the sum of eight thousand two hundred and seventy-seven dollars (\$8,277) be and is hereby appropriated from the Endowment Fund of the Ohio State University for the support and maintenance thereof, in payment of salaries and current expenses, and the Secretary is directed to draw orders for the same under the authority of the Board.

A letter was received from T. C. Mendenhall, Professor of Physics and Mechanics, tendering his resignation.

On motion duly put and carried, it was

*Ordered*, That the communication of Prof. Mendenhall be spread on the minutes.

Also,

*Ordered*, That it is with extreme regret the Board accepts his resignation of a position which he has so long filled with eminent ability, with entire satisfaction to the Trustees, and great advantage to the institution; and this Board tenders to him its best wishes in his future career.

The following was now communicated to the Board as the unanimous action of the Faculty:

"The Faculty unanimously recommend that the degree of Doctor of Philosophy be conferred on Professor T. C. Mendenhall, in recognition of his eminent services in science and public instruction."

On motion, it was unanimously

*Resolved*, That it gives this Board great pleasure to comply with the recommendation of the Faculty.

Whereupon it was

*Ordered*, That the degree of Doctor of Philosophy be conferred on Professor Thomas C. Mendenhall by the Ohio State University.

On motion of Mr. Alston Ellis, it was

*Resolved*, That the resolution passed by a former Board by which the salaries of the President and those Professors receiving \$2,500 per annum be reduced ten per cent. until the average attendance of students be two hundred, be rescinded.

Various matters were partially discussed, and the Board now, at 12:30 P.M., determined to attend the closing exercises of the University, and adjourned until 9 A.M. to-morrow.



COLUMBUS, *June 20, 1878.*

Board met at 9 o'clock A.M.

Charles A. Barton, agent for the care and sale of the Virginia Military Lands belonging to the University, being present, made a written report and exhibit of the sale since his last settlement. The report was ordered to be filed, and after considerable verbal explanations on the general subject, it was

*Ordered*, That the papers and accounts presented by Charles A. Barton be referred for further examination and settlement to the Finance Committee.

On motion of Mr. Alston Ellis, it was

*Resolved*, That the Executive Committee is hereby authorized and empowered to enter into a correspondence with eminent physicists with a view of securing a Professor of Physics and Mechanics to fill the position in the Faculty of the University made vacant by the resignation of Prof. Thomas C. Mendenhall; and said committee is further empowered to select a Professor and recommend him to this Board for election.

Mr. Armstrong, of Greene county, appeared before the Board with a plat of survey of supposed vacant Virginia Military Land belonging to the University in said county, and after verbal explanations, on motion of Mr. Jamison, it was

*Ordered*, That Mr. S. H. Ellis is hereby authorized to sell a portion of land in the Virginia Military District of Ohio, in Greene county, being the property of the University, at such price as he may deem just and proper.

[N. B.—It was subsequently explained that, under the act granting these lands to the Ohio Agricultural and Mechanical College, it was necessary that this particular tract of land, like others of the same kind, must first be appraised, in accordance with the act, before being offered for sale, and Mr. Ellis was instructed accordingly.]

The subject of the boarding-house was discussed with Mr. Baker, an applicant for the same, when, on motion of Mr. Alston Ellis, it was

*Resolved*, That the use of the boarding-house, after the same has been put in a reasonable state of repair by the Executive Committee, the furniture therein which is the property of the Board, five acres of land, pasturage for one horse and one cow, be tendered to E. P. R. Baker for the ensuing year, on condition that he furnish good lodging, boarding, and fuel to students in attendance upon the University classes at a rate not to exceed three dollars and fifty cents (\$3.50) per week.

On motion of Mr. Johnson, it was

*Resolved*, That the Board having indicated its choice for the occupant of the boarding-house at the University, refer the matter to the Executive Committee to fix terms and have the same properly and definitely settled by a written contract.

On motion of Mr. Alston Ellis, it was

*Resolved*, That the sum of five hundred dollars (\$500) be and is hereby appropriated for the purchase of such books for the University library as will be serviceable for use in the departments of Agriculture and Botany, Mining and Metallurgy, English Language and Literature, Geology, and for general purposes; said sum to be expended by the President of the Faculty after consultation with the heads of the departments for which the books are particularly designed.

On motion, the Board adjourned until 2 o'clock P.M.

#### AFTERNOON SESSION.

Board met at 2 o'clock P. M.

A communication was received from the Adjutant-General of the State, relative to the safe keeping of the arms and accoutrements in possession of the University, whereupon the following resolution was offered and adopted:

*Resolved*, That the Executive Committee is hereby instructed to take suitable precautions to insure the safety of the ordnance and small arms now in the University building during the present vacation.

On motion of Mr. Miller, it was

*Resolved*, That the Executive Committee be authorized and requested to procure insurance to the amount of sixty thousand dollars (\$60,000) on the University buildings.

The farm accounts of Professor Townshend were presented and referred to the Farm Committee for examination and report thereon.

A communication from Edward Orton, President of the University, was presented and read. He offered his resignation as President, and made request that he be retained in the chair of Geology. The Board declined to receive the resignation, and the communication was ordered to be laid on the table for future consideration and action.

The Board now adjourned until to-morrow at 8½ o'clock A. M.

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COLUMBUS, June 21, 1878.

Board met at 8½ o'clock A. M., and was called to order. A quorum being present, received and adopted the following report:

COLUMBUS, OHIO, June 21, 1878.

*To the Board of Trustees of the Ohio State University:*

Your Finance Committee, to whom was referred the reports and accounts of Charles A. Barton, would respectfully report that they have examined the same, and would recommend that an order be drawn on the Treasury of the University, in favor of C. A. Barton, for the sum of four hundred and thirty-nine dollars and five cents (\$439.05), said sum being in full of the amount claimed by said Charles A. Barton, in payment for service rendered by him as agent of the University up to date, as per account rendered.

T. EWING MILLER,  
ALSTON ELLIS.

Mr. Ralph Leete, a former trustee, and President of Board of Trustees of the Ohio Agricultural and Mechanical College, appeared with books and papers relative to the sale and management of Virginia Military Lands by William H. Leete, a former agent of this Board. A long statement and discussion relative thereto was had, when, on motion of Mr. Jameson, the whole question of the Virginia Military Lands was referred to a commission of three, to investigate the condition of the lands and report the result of their finding at the subsequent meeting of this Board.

A long discussion ensued on various propositions to nominate the members of the commission proposed, but without agreement by the parties interested, whereupon, by mutual consent, the matter was deferred until the afternoon and evening.

On motion of S. H. Ellis, it was

*Resolved*, That the sum of twelve hundred dollars (\$1,200) be and is hereby appropriated to be expended on the University farm, under the direction of the Farm Committee.

The Board now adjourned to 2 o'clock P. M.

#### AFTERNOON SESSION.

Board met at 2 o'clock P.M. Interviews were held with the President and Professors relative to the wants of their several departments, Messrs. Millikin, Church, Norton, and Townshend being successively called before them, after which, on motion of Mr. Alston Ellis, it was

*Ordered*, That the Board do now proceed to the consideration of the appointment and retention of the members of the present faculty and assistants.

After brief discussion it was decided that all the professors and teachers be continued in their present positions.

On motion of A. Ellis, it was

*Resolved*, That hereafter all reports made to this Board by its committees, the members of the Faculty, and the agents and employes of the University, be submitted in writing, although verbal explanation may be allowed by permission of the Board.

On motion, it was

*Resolved*, That Charles A. Barton is the authorized agent of the Ohio State University for the care and sale of the Virginia Military Lands belonging to the said institution, and is hereby fully authorized and instructed to prosecute all suits and controversies relating to the occupancy of and title to said lands in its name.

*Resolved*, That the Secretary of this Board furnish Charles A. Barton with a certified copy of the above resolution, as an evidence of his authority to act in the behalf of the University.

On motion of Mr. Miller, it was

*Resolved*, That Curtis C. Howard, B.S., be appointed, at a salary of five hundred dollars (\$500) per year, to perform such chemical analyses as the laws of the State now require the University to make.

The committee to whom was referred the report and account of Professor Townshend, now made a verbal report, recommending the account to be paid; whereupon, it was

*Ordered*, That the account of Dr. Townshend, Professor of Agriculture, be paid to the amount of four hundred and eight dollars and ninety-nine cents (\$403.99), it being the balance of \$183.99 against the farm operations, and \$225 for cattle furnished by him as per account.

The Board now adjourned to meet at 8 o'clock P.M.

#### EVENING SESSION.

The Board met at 8 o'clock P.M.

On motion, duly put and carried, it was

*Resolved*, That the sum of thirteen hundred and fifty dollars (\$1,350) be and is hereby appropriated, to be expended by the Executive Committee in furnishing needed supplies for the different departments enumerated below:

Department of General and Applied Chemistry, seven hundred dollars (\$700).

Department of Zoölogy and Comparative Anatomy, one hundred dollars (\$100).

Department of Mining and Metallurgy, two hundred and twenty-five dollars (\$225).

Department of Drawing, two hundred and twenty-five dollars (\$225).

On motion, it was

*Ordered*, That two hundred dollars (\$200) be and is hereby placed at the disposal of the Executive Committee, to be expended in advertising the University in various newspapers in the State, and three hundred dollars (\$300) for assistant students for the fall term of 1878.

It was also

*Ordered*, That the qualifications for entrance to the University remain as heretofore.

*Ordered*, That the question of discipline be referred to the Faculty, and also that of military drill.

On motion, it was

*Ordered*, That Miss M. F. Morrison be appointed Assistant Librarian, at a salary of one hundred and twenty-five dollars (\$125) per year, her services to be three hours per day in the library room, which is to be a study room, where she is to preside and keep order.

On motion of Mr. Anderson, it was

*Resolved*, That the salary of Miss Alice Williams be increased to five hundred and fifty dollars (\$550) per year.

On motion of Mr. Godfrey, it was

*Resolved*, That one acre of land be conveyed to a certain district in Scioto county, on payment by said district of the appraised value of said acre of land.

*Ordered*, That two thousand (2,000) copies of a circular, to be prepared by the President of the University, be printed to accompany the annual reports now on hand.

*Ordered*, That the address of President Orton be printed in the next annual report.

On motion of Mr. Jameson, it was

*Resolved*, That the Faculty are hereby directed to arrange and provide for a course of lectures on agriculture, to be delivered in the University, beginning in January next, and to continue for one month, for which the charge to those in attendance shall be five dollars (\$5), to pay necessary expenses.

And now the Board proceeded to consider and hear statements upon the question of the Virginia Military Lands belonging to the University. Mr. Ralph Leete, acting for William H. Leete, with whom a former Board had an agreement concerning these lands, made statements thereto, and, after a two hours' session, it was

*Ordered*, That this whole question, with the papers and documents relative thereto, be referred for examination and report to this Board, to a committee of three, consisting of Messrs. Godfrey, President of the Board, and Miller and Anderson of the Executive Committee.

Mr. Anderson moved that William Colvin, formerly occupying the chair of Political Economy and Civil Polity in the Ohio Agricultural and Mechanical College, be appointed to the same position in this University—said chair having been stricken from the curriculum of the College, by the Board of Trustees, in November, 1877.

After a short discussion, and before any vote on the resolution was declared, Mr. Anderson withdrew the resolution, with the consent of the Board, whereupon, Mr. Alston Ellis offered the following preamble and resolution :

**WHEREAS**, A question has been raised as to the legality of the vote of a former Board, by which the chair of Political Economy and Civil Polity was stricken from the curriculum ; therefore, be it

*Resolved*, That this Board declare said chair of Political Economy and Civil Polity abolished, and that the services of William Colvin, as Professor of said department, are no longer required.

The yeas and nays being called, the resolution was unanimously adopted, as follows, to wit :

**YEAS**—Messrs. Godfrey, A. Ellis, Miller, and Jameson—4. **NAYS**—0.

At 11 o'clock P.M., the Board adjourned until its regular meeting in November, unless sooner called together by the President or Executive Committee.

(Signed)

T. J. GODFREY, *President*.

COLUMBUS, OHIO, *July 8, 1878.*

Board met upon the call of the President. Present, Messrs. Godfrey, Johnston, Anderson, and Miller. A quorum being present, the Board was called to order, and proceeded to business.

President Orton was heard in relation to a circular ordered to be prepared by him. He also laid before the Board some letters and recommendations relative to applications for the chair of Physics in the University. The matter was referred to the Executive Committee for report.

On motion of Mr. Johnston,

*Ordered*, That the Secretary furnish to Prof. Mendenhall certified copies, under seal of the University, of their proceedings in relation to his resignation.

Mr. Mathews was heard in relation to his department, and an increase of his salary.

The committee to whom was referred the subject of the Virginia Military Lands being now ready to report, occupied the remainder of the evening.

On motion, the Board adjourned until 9 A.M. to-morrow.

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COLUMBUS, *July 9, 1878.*

Board met in the portrait room of the Governor's office at 9 o'clock A.M. Present, Messrs. Godfrey, Miller, Johnston, Alston Ellis, and Jameson. A quorum being present, the Board came to order, and resumed the consideration of the subject of the Virginia Military Lands, which occupied their attention until noon, at which time the Board adjourned until 1½ o'clock P.M.

#### AFTERNOON SESSION.

Board met at 1½ o'clock P.M., and was called to order, and resumed the matter of settlement with W. H. Leete relative to the Virginia Military Lands. Statements and verbal explanations were heard from Wm. H. and Ralph Leete, and at 3 o'clock the Board went into executive session, when the committee to whom had been referred all the accounts and statements of the above Messrs. Leete, offered the following, which was unanimously adopted:

*Resolved*, That for the purpose of making a final and full settlement with W. H. Leete for his services to this date, in relation to the Virginia Military Lands, the Board of Trustees tender to him the sum of seventeen hundred dollars (\$1,700), to be paid to him out of the proceeds of lands hereafter to be sold and such lands as have heretofore been reported by him as belonging to the Ohio State University, and upon his acceptance of this offer, that he surrender all plats, papers, and documents of every description in his possession or under his control, relating to said lands, of any value concerning the same.

I do hereby accept the foregoing.

(Signed)

W. H. LEETE,  
By RALPH LEETE.

On motion duly made, and carried affirmatively, it was

*Resolved*, That the Secretary of this Board be instructed to notify Mr. W. H. Leete to turn over to the Executive Committee all papers and documents relating to the Virginia Military Lands, as mentioned in the resolution adopted as the basis of agreement between said W. H. Leete and this Board.

It appearing by the statement of Ralph Leete, Esq., that he had obtained a decree in Scioto county, Ohio, in favor of the Ohio State University and against James Taylor, setting aside a sale of land to him in said county, and that the notes given by said Taylor, in the purchase of said land, ought to be filed in the Clerk's office of said county as having been cancelled, it is

*Ordered*, That the Treasurer deliver over said notes to Ralph Leete to be filed as aforesaid.

On motion of Alston Ellis, it was

*Resolved*, That the position of Professor of Physics and Mechanics, made vacant by the resignation of Thomas C. Mendenhall, be tendered to Prof. S. W. Robinson, of Champaign, Illinois, said professorship to be on the same footing, as regards salary, as the other regular professorships now connected with the University are.

On motion of Mr. Jameson, it was

*Resolved*, That the Executive Committee of this Board is hereby instructed to refer the claim of Professor William Colvin, for alleged services in the Ohio Agricultural and Mechanical College, to the Attorney General for a legal opinion as to the liability of this Board to pay such claim, and to report the opinion so obtained to this Board at the next meeting.

On motion duly put, it was

*Ordered*, That the matter referred to in Captain Barton's letter, relative to a check of Lorace Leete, in the case of Cappet and Webb, be referred to the Executive Committee with power to act.

The Board then adjourned to meet at the American Hotel at 8½ P.M.

#### EVENING SESSION.

Board met at 8½ o'clock P.M. A quorum being present, Mr. Johnston took the chair, and called the Board to order.

The evening was spent in discussing various matters of interest connected with the University, but nothing requiring to be recorded.

At a late hour, it was moved, and carried, that this Board do now adjourn to meet in the city of Columbus on the first Thursday of November, in accordance with the following:

*Ordered*, That the next annual meeting of this Board be held on the first Thursday of November next, at 8 o'clock P.M.

(Signed)

T. J. GODFREY, *President*.



COLUMBUS, *September* 11, 1878.

Board was called by the President to meet this day at 7½ P.M.

There being present a quorum, to wit: Messrs. Godfrey, Miller, Johnston, S. H. Ellis, J. H. Anderson, and Jamison, the President took the chair and called the Board to order, and the minutes of the former meeting were read and approved.

A communication from Capt. Barton relative to a certain sale of Virginia Military lands was received and read, and, on motion of Mr. Johnston, was laid on the table for future consideration.

Mr. Johnston offered the following, which, being duly seconded, was before the Board.

WHEREAS, At a meeting of Trustees on the 19th of June, 1878, a resolution was passed as follows:

*Resolved*, That the resolution passed by a former Board, by which the salaries of the President and those professors receiving \$2,500 per annum be reduced ten (10) per cent. until the average attendance of students shall be two hundred (200) be rescinded.

And WHEREAS, It was then the intention of the Board that, although said resolution did, by implication, restore the salaries to their original sum, \$2,500, it was then the intention of the Board to fix the salaries of the Professors at the sum of \$2,250 per annum, and that the Board did then neglect to fix the salaries as contemplated by the Board; therefore

*Resolved by the Board*, That the salaries of said professors be and the same are fixed as follows: For the professors, each \$2,250 per annum; for the President, the sum of \$2,750 per annum.

Mr. Anderson moved to amend by striking out the sum of \$2,250, and the sum of \$2,750, where they respectively occurred, and insert \$2,000 and \$3,000.

A debate now arose, after which a vote by yea and nay was demanded, and, on calling the roll, those voting yea were: Messrs. Anderson, Jamison, and S. H. Ellis—3. Those voting nay: Messrs. Godfrey, Miller, and Johnston—3. The President declared the motion lost; and the question on the adoption of Mr. Johnston's preamble and resolution being now put, it was decided in the affirmative.

Mr. Anderson, Chairman of the Executive Committee, to whom had been referred the claim of William Colvin for pay for services never performed, reported that the committee had conferred with the Attorney-General on the subject, and were ready to report.

On motion, it was

*Ordered*, That all the reports of the committee be heard.

Mr. Anderson made a verbal report, and read the report of the Attorney-General.

On motion,

*Ordered*, That the report be accepted, placed on file, and the committee discharged.



On motion of Mr. Johnston, the resignation of President Orton, tendered and laid on the table at a former meeting, was now taken up and discussed, after which Mr. Johnston offered the following, which was unanimously adopted:

*Resolved*, That the resignation of President Orton, heretofore tendered, be not now accepted, and that he be requested to continue as such President of the Ohio State University until otherwise determined by the Board.

Interviews were had with Professors Church and Lomia in regard to their departments, and the Board listened to their request and explanations.

The Board then adjourned until to-morrow at 7½ o'clock P.M.

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COLUMBUS, *September* 12, 1878.

Board met at 7½ o'clock P.M.

President Orton presented a communication from Professor Robinson, and made some explanations concerning the necessity of some appropriation for the benefit of Mechanics.

The communication of Professor Robinson was read and discussed, when it was

*ordered*, That six hundred dollars (\$600) be and is hereby appropriated to be expended by Professor Robinson for supplies for the Physical Laboratory, and an increased equipment in Mechanics.

A preamble and resolutions concerning military drill were now presented for the consideration of the Board, and elicited considerable discussion.

Mr. S. H. Ellis moved that the rules be amended so as to require that military students be required to give the military salute to the professors of military tactics and drill while on the University grounds.

This amendment, on being put to vote, was lost; and now, the resolutions being read one by one, and slightly amended, the question turned on their adoption, and, upon motion duly put and questioned, was decided affirmatively, only Mr. S. H. Ellis voting nay.

**WHEREAS**, The Board of Trustees are impressed with the necessity of assuming some responsibility as regards the military drill, the following resolutions are adopted with a view of insuring its greater efficiency:

*Resolved*, That the students electing military drill shall be required to continue in this the period of one calendar year from their entrance therein. The date of entrance shall be determined, in every instance, by the date of the student's own signature, in a book kept for that purpose by the Professor of Military Science and Tactics. Non-compliance with this requirement must be attended with the dismissal of the student from the University, unless specially excused by the Faculty.

II. *Resolved*, That all students while undergoing military training shall wear a uniform as at present, or as the Faculty shall prescribe from time to time. A period of four weeks will be allowed students from date of entrance to the drill, in which to provide themselves with the required uniform.

III. *Resolved*, That an academic value will be given to the Military Department, and said department shall be placed in one of the schools of the University. The drill will count as a quarter of the study; the theoretical study of tactics and military science taken conjointly with drill, shall also count as a quarter of a study. In case of the commissioned officers, however, the drill will count as half a study, and the study of tactics and military science as half a study. In applying this rule, a cadet shall be considered as having been a commissioned officer all of the year in which he receives his promotion, provided that he holds his office until the end of that academic year. No value will be given to the study of tactics when not taken in connection with that of military science, as the acquiring of a knowledge of the former is a necessity with all cadets holding office.

IV. *Resolved*, That the Faculty shall provide a duty for those who do not engage in the drill, during the hours set apart for military instruction.

V. *Resolved*, That no student shall wear the military uniform prescribed by the Faculty, except those who drill, or those who have completed a two years' course of practical and theoretical military training, under penalty of dismissal from the University.

VI. *Resolved*, That when the Ohio State University Battalion of Cadets, or any part thereof, is ordered by the Faculty to take part in any public parade, procession, prize-drill, on the campus, or exercise, on commencement day, the cadets shall obey the order, under penalty of suspension for the remainder of that and all the next University term, even though this term should be in the next academic year.

VII. *Resolved*, That the students undergoing military instruction shall be required to render the proper military salute to their commanding officer, and to the Professors of the University, on meeting them anywhere outside of the University building.

VIII. *Resolved*, That the existing Faculty regulations, by which a student is expelled from the University on receiving eight (8) unexcused reports for breaches of military discipline in any one term, is hereby fully approved and indorsed.

Mr. Leo. Weltz, of the State Board of Agriculture, appeared, and offered to donate a fine collection of evergreens for the College grounds; whereupon it was

*Ordered*, That this liberal offer be accepted, and the thanks of the Board be returned to Mr. Weltz.

Application was made by Dr. Townshend for a cistern and some repairs to his house, which, after being discussed, it was

*Ordered*, That the sum of fifty dollars (\$50) be and is hereby appropriated for this purpose, to be expended under the direction of the Executive Committee, and to be paid from Dr. Townshend's house-rent.

It was also

*Ordered*, That Mr. Thorne, Farm Superintendent, charge Prof. Townshend twelve and one-half cents per head, per month for pasturage of sheep on the College farm.

It was

*Ordered*, That Mr. Thorne proceed to gather the corn for the University off the ground claimed by Walter L. Turner, for his use.

It was also

*Ordered*, That 5,000 letter-heads, at six dollars (\$6) per thousand and 5,000 envelopes, at five dollars (\$5) per thousand, be provided for the use of this Board and the University.

Certain accounts of W. L. Turner were referred to the Executive Committee.

It was

*Resolved*, That Prof. Lomia be employed for the ensuing school year as teacher of elocution, at the rate of *fifty dollars* (\$50) per term.

On motion of Mr. Johnson,

*Resolved*, That the janitor of the University buildings be paid a monthly salary of sixty dollars, to be in full payment for his services, and also services of any help required by him in discharge of his duties as heretofore rendered—his term of service to be regulated by the trustees, as they may deem proper or necessary in the interest of the University.

On motion of Mr. Godfrey,

*Resolved*, That the Standing Committee of this Board report to the Board at the next November meeting, a detailed statement of all expenditures of moneys appropriated for their disposal, and that the President of the Faculty report to us at the same time, in detail, all moneys expended by him and the Faculty, and a list of the newspapers in which the University was advertised this year.

On motion, the Board now adjourned to November 6th, eight P.M.

(Signed)

T. J. GODFREY, *President*.

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COLUMBUS, OHIO, *November 6, 1878.*

Pursuant to adjournment, the Board of Trustees met at 8 o'clock P.M. Present: Messrs. Godfrey, Miller, Johnston, and Anderson. A quorum being present, the Board proceeded to business.

A communication was received from Prof. Church informing the Board that Curtis C. Howard, who had been appointed Special Analyst at a previous meeting of the Board, had declined the appointment. After explanations made by Prof. Church, on motion of Mr. Miller, it was

*Resolved*, That in place of Curtis C. Howard, Nat. W. Lord, M.E., be appointed, at a salary at the rate of \$500 per annum, to perform such analyses as the laws of the State may now require the University to make.

A communication was received from Prof. Lomia in reference to the procurement of additional arms and military stores for his department, which was discussed and referred to Executive Committee, with power to act.

On motion, it was

*Ordered*, That the action of the Board at a former meeting, in relation to a portion of a crop of corn claimed by Walter Turner, be and is hereby rescinded.

On motion, the Board adjourned until 9 o'clock A.M. to-morrow.

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COLUMBUS, *November 7, 1878.*

Board met at 9 o'clock A.M. Present: Messrs. Godfrey, Johnston, Alston Ellis, S. H. Ellis, Anderson, and Miller.

Mr. Alston Ellis having informed the Board that the Committee on By-Laws, Rules, and Regulations were ready to report, on motion, it was

*Resolved*, That we now proceed to hear and discuss the By-Laws.

The same having been read, discussed, and amended,

On motion of Mr. Johnston,

*Resolved*, That this Board do now adopt the following By-Laws, Rules, and Regulations. [See By-Laws, Rules, and Regulations in Appendix B.]

On motion of Mr. Anderson, it was

*Resolved*, That the President of this Board be requested to confer with the Attorney-General in reference to the manner in which the expenses of the members of the Board, as allowed by law, shall be paid—whether from the University funds or the State Treasury.

Board took a recess until half-past one o'clock P.M. On reassembling at that time Captain Charles A. Barton, Agent of the University for the sale of Virginia Military Lands, made a verbal report of his proceedings.

On motion of Mr. S. H. Ellis, it was

*Resolved*, That Charles A. Barton be continued as our Agent for the care and sale of the Virginia Military Lands, and that he have his necessary expenses paid and receive for his services sixty dollars (\$60) per month.

The ayes and nays having been demanded on the passage of the resolution, those voting aye were: Messrs. Anderson, Miller, S. H. Ellis, Godfrey, and A. Ellis—6; those voting nay: None. So the resolution was carried affirmatively.

On motion of Mr. Johnston, it was

*Resolved*, That the account of Captain Charles A. Barton, amounting to three hundred and ten dollars and forty-two cents (\$310.42), for services to November 1, 1878, be allowed, and the Secretary is hereby directed to draw an order on the Treasurer for the same.

On motion of Mr. S. H. Ellis, it was

*Resolved*, That the fee of five dollars (\$5.00) for the Special Agricultural Course to begin in January next is hereby remitted, and the course shall be free.

*Resolved*, That one thousand five hundred circulars, announcing the above fact, be printed and distributed.

On motion of Mr. Johnston,

*Resolved*, That the contract of sale made May 12, 1865, to Amos Nichols, of lot No. 104, of thirty-nine acres, and two hundred and twelve acres of lot No. 103, in Scioto county, for the sum of seven hundred and thirty-nine dollars (\$739), be rescinded; and that Mr. Nichols, having deeded to him lot No. 104, of thirty-nine acres, and twenty-two acres of lot No. 103, in full satisfaction of the sum of two hundred and forty-seven dollars, paid by Mr. Nichols May 12, 1875, and that the Treasurer, Dr. H. S. Babbitt, is hereby directed to deliver to Amos Nichols his notes for the purchase money.

Board adjourned to 7½ o'clock P.M.

#### EVENING SESSION.

Board met at 7½ o'clock P.M. with a quorum present. The President of the University appeared and presented his report and the reports of the professors in the University, which were referred to the Executive Committee.

On motion of Mr. A. Ellis,

*Resolved*, That no apparatus nor specimens belonging to the University shall be removed from the University buildings, for any purpose whatsoever, unless by a direct vote of the Board.

On motion of Mr. Miller, it was

*Resolved*, That the President of the Board be instructed to correspond with the War Department, for the purpose of securing the detail of Lieutenant Lomia as Professor of Military Science and Tactics, for a period of two years longer.

On motion of Mr. A. Ellis, it was

1. *Resolved*, That the sum of four hundred dollars (\$400) be and is hereby appropriated for the use of the Executive Committee, to be expended in securing such teaching assistance, during the second and third terms, as, in their opinion, seem needful; the above sum to include such laboratory fees as may be remitted in payment for such student teaching.

2. *Resolved*, That the Executive Committee is hereby authorized to expend any sum not exceeding forty dollars (\$40), in securing suitable material for dissection in the Zoölogical Laboratory.

3. *Resolved*, That the Executive Committee is hereby authorized to make such terms with those students now occupying the Club House, as may be just and proper, with a view to fixing the responsibility of such students as regards any damage done to the building during their occupancy of same.

Board adjourned to 9 o'clock A.M.

COLUMBUS, November 9, 1878.

Board met at 9 o'clock A.M., and a quorum being present, proceeded to business.

An interview was had with the Treasurer, when, on motion, it was

*Resolved*, That the income from the Endowment Fund (so called), held in trust by the State, be appropriated for the support of the University for the ensuing fiscal year, and for such other purposes incidental thereto as the Board may from time to time designate: provided, that the use of the income of so much of the fund as arises from the proceeds of the lands donated by the act of Congress, July 2, 1862, be limited to the restrictions of the second clause of section five of said act of Congress.

A communication had been received from Mr. Ralph Leete, concerning a lawsuit of William H. Leete, a former land agent of the Board, in regard to compensation for his services, and it had been agreed to invite the attorney of William H. Leete, and the Attorney-General, to an interview; whereupon these gentlemen appeared, each making a statement—Mr. M. A. Daugherty for William H. Leete, and the Attorney-General for the Board.

After which, on motion of Mr. A. Ellis, it was

*Resolved*, That the proposition of William H. Leete, made through Ralph Leete, that the matters at issue between said William H. Leete and this Board, now pending in the Common Pleas Court of Franklin county, Ohio, be referred to a committee consisting of the Attorney-General of the State, Isaiah Pillars, M. A. Daugherty, T. J. Godfrey, and Stephen Johnston, with full power to investigate, and take such action as in their judgment is both just and equitable to said William H. Leete and Ohio State University, and that their action shall be final and conclusive.

The Board now adjourned to 1½ o'clock P.M.

#### AFTERNOON SESSION.

Board met at 1½ o'clock P.M.

On motion, it was decided to proceed to the usual election of officers for the ensuing year, beginning November 15, 1878.

The following officers were elected:

*President*.—T. J. Godfrey, of Celina, Ohio.

*Secretary*.—Albert Allen, of Columbus.

*Treasurer*.—Dr. H. S. Babbitt, of Columbus.

*Executive Committee*.—J. H. Anderson, T. Ewing Miller, and Stephen Johnston.

*Farm Committee*.—S. H. Ellis, J. H. Anderson, and James B. Jamison.

*Finance Committee*.—T. Ewing Miller, Alston Ellis, and Stephen Johnston.

On motion of Mr. A. Ellis, it was

*Resolved*, That in the retirement of Joseph Sullivant as Secretary of this Board, we desire to express our high appreciation of his valuable services, extending over a period of several years, in behalf of the University.

The Board now, at 3 o'clock, adjourned to visit the University.

## EVENING SESSION.

At 8 o'clock P.M., pursuant to adjournment, the Board met, and a quorum being present, proceeded to business.

On motion of Mr. Miller, it was

*Resolved*, That Albert Allen be elected Secretary *pro tem.* for the balance of the present fiscal year.

On motion of Mr. Miller,

*Resolved*, That an appropriation of one hundred and twenty-five dollars (\$125) be made for the purpose of providing a Pathological Cabinet and such charts as may be needed for illustration in veterinary instruction; this to be in lieu of a former appropriation, made in June, 1876, for Professor Townshend's department, and never used.

Various matters of general interest were informally considered, but no definite action taken thereon.

On motion of Stephen Johnston, it was

*Resolved*, That when the Board adjourns, it be to meet again on the 28th day of November, 1878, at 8 o'clock P.M., at the American House, in Columbus.

On motion, the Board then adjourned.





# APPENDIX.



## APPENDIX A.

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### HISTORY OF THE OHIO STATE UNIVERSITY, FORMERLY THE OHIO AGRICUTURAL AND MECHANICAL COLLEGE.

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CONTAINING ACT OF INCORPORATION AND UNREPEALED ACTS OF THE  
GENERAL ASSEMBLY OF OHIO.

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The history of this institution is embraced within quite narrow limits.

On July 2d, 1862, the Congress of the United States passed an act donating lands to the several States and Territories which may provide colleges for the benefit of Agriculture and the Mechanic Arts. The act is recited below :

#### AN ACT

To accept an act of congress approved July 2d, 1862, entitled " an act donating lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts."

[Passed and took effect February 9, 1864. 61 vol. Stat. 7.]

WHEREAS, by an act of congress approved July second, one thousand eight hundred and sixty-two, it is provided as follows :

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That there be granted to the several states for the purposes hereinafter mentioned, an amount of public land to be apportioned to each state a quantity equal to thirty thousand acres for each senator and representative in congress, to which the states are respectively entitled by the apportionment under the census of eighteen hundred and sixty ; *provided*, that no mineral lands shall be selected or purchased under the provisions of this act.

SEC. 2. That the land aforesaid, after being surveyed, shall be apportioned to the several states in sections or subdivisions of sections not less than one quarter of a section, and whenever there are public lands in a state subject to sale at private entry at one dollar and twenty-five cents per acre, the quantity to which said state shall be entitled shall be selected from such land within the limits of such state, and the secretary of the interior is hereby directed to issue to each of the states in which there is not the

quantity of public lands subject to sale at private entry at one dollar and twenty-five cents per acre, to which said state may be entitled, under the provisions of this act, land scrip to the amount in acres for the deficiency of its distributive share, said scrip to be sold by said states, and the proceeds thereof applied to the uses and purposes prescribed in this act, and for no other use or purpose whatsoever; *provided*, that in no case shall any state to which land scrip may be thus issued, be allowed to locate the same within the limits of any other state or of any territory of the United States; but their assignees may thus locate said land scrip upon any of the unappropriated lands of the United States subject to sale at private entry, at one dollar and twenty-five cents per acre; and *provided further*, that not more than one million acres shall be located by such assignees in any one of the states; and *provided further*, that no such location shall be made before one year from the passage of this act.

SEC. 3. That all the expenses of management, superintendence and taxes, from date of selection of said lands, previous to their sales, and all expenses incurred in the management and disbursement of the moneys which may be received therefrom, shall be paid by the states to which they may belong out of the treasury of said states, so that the entire proceeds of the sale of said lands shall be applied without any diminution whatever to the purpose hereinafter mentioned.

SEC. 4. That all moneys derived from the sale of the lands aforesaid by the state to which the lands are apportioned and from the sales of the land scrip hereinbefore provided for shall be invested in stocks of the United States, or some other safe stocks, yielding not less than five per centum upon the par value of said stocks, and that the moneys so invested shall constitute a perpetual fund; the capital of which shall remain forever undiminished (except so far as may be provided in section fifth of this act), and the interest of which shall be inviolably appropriated by each state which may take and claim the benefit of this act to the endowment, support and maintenance of at least one college, where the leading objects shall be without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such a manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of of the industrial classes in the several pursuits and professions of life.

SEC. 5. That the grant of land and land scrip hereby authorized, shall be made on the following conditions, to which as well as to the provisions hereinbefore contained the previous assent of the several states shall be signified by legislative act:

1st. If any portion of the fund invested, as provided by the foregoing section, or any portion of the interest thereon, shall by any action or contingency, be diminished or lost, it shall be replaced by the state to which it belongs, so that the capital of the fund shall remain forever undiminished, and the annual interest shall be regularly applied without diminution to the purposes mentioned in the fourth section of this act, except that a sum not exceeding ten per centum upon the amount received by any state under the provisions of this act may be expended for the purchase of lands for sites or experimental farms whenever authorized by the respective legislatures of said states.

2d. No portion of said fund, nor the interest thereon, shall be applied directly or indirectly under any pretense whatever, to the purchase, erection, preservation, or repair of any building or buildings.

3d. Any state which may take and claim the benefit of the provisions of this act, shall provide within five years at least not less than one college as described in the fourth section of this act, or the grant to such state shall cease, and said state shall be bound to pay the United States the amount received of any lands previously sold, and that the title to purchase under the shall be valid.

4th. An annual report shall be made, regarding the progress of each college, recording any improvements and experiments made, with their costs and results, and such other matters including state industrial and economical statistics as may be supposed useful; one copy of which shall be transmitted by mail free, by each, to all other colleges which may be endowed under the provisions of this act, and also one copy to the secretary of the interior.

5th. When lands shall be selected from those which have been raised to double the minimum price, in consequence of railroad grants, they shall be computed to the states at the maximum price, and the number of acres proportionally diminished.

6th. No state while in condition of rebellion or insurrection against the government of the United States, shall be entitled to the benefits of this act.

7th. No state shall be entitled to the benefits of this act, unless it shall express its acceptance thereof by the legislature within two years from the date of its approval by the President.

SEC. 6. That land scrip issued under the provisions of this act, shall not be subject to location until after the first of day January, one thousand eight hundred and sixty-three.

SEC. 7. That the land officers shall receive the same fees, for locating land scrip issued under the provisions of this act, as are now allowed for the location of military bounty land warrants, under existing laws; *provided*, their maximum compensation shall not be thereby increased.

SEC. 8. That the governors of the several states to which scrip shall be issued under this act, shall be required to report annually to congress all sales made of such scrip until the whole shall be disposed of, the amount received for the same, and what appropriation has been made of the proceeds.

On February 9th, 1864, the General Assembly of the State of Ohio passed an act to accept the grant conveyed in the act above given, in the following words:

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the assent of said state is hereby signified to the aforesaid act of congress, and to all the conditions and provisions therein contained, and the faith of the state of Ohio is hereby pledged to the performance of all such conditions and provisions.

SEC. 2. This act to take effect and be in force from and after its passage.

Governor John Brough, in his annual message, delivered in January, 1865, announced that certificates of scrip for 630,000 acres of land had been received and placed in the State Treasury. The next step was the passage of

#### AN ACT

To provide for the sale of land scrip, and other purposes.

[Passed and took effect April 13, 1865. 62 vol. Stat., 189.]

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the auditor, treasurer, and secretary of state are hereby authorized and directed on or before the first day of May, eighteen hundred and sixty-five, to advertise in such form as they may deem proper, for proposals for the purchase of the land scrip received from the United States, for the establishment of an agricultural college or colleges in the state

of Ohio. Such advertisement shall authorize proposals to be received by the auditor, treasurer, and secretary of state, and by the auditor and treasurer in each and every county in the state. The term of said notice shall not be less than ninety days from the date thereof. No proposition shall be received for less than one hundred and sixty acres, nor for a rate of less than eighty cents per acre. [*Repealed April 5, 1866.*]

SEC. 2. If offers should not be received for the whole of said scrip, acceptable to said auditor, treasurer, and secretary of state, the said officers are authorized and directed to again advertise, in like manner, for proposals for the portion remaining unsold. The term of said notice shall be sixty days from date, and be otherwise governed by the regulations hereinbefore provided. [*Repealed April 5, 1866.*]

SEC. 3. Upon the acceptance of proposals, and payment thereon, the party entitled thereto shall receive from said officers the amount of scrip so purchased, with a certificate that he has duly purchased and paid for the same; and on presentation of the same to the governor, he shall execute the necessary transfer of the scrip, in accordance with the regulations provided by the general land office therefor.

SEC. 4. The auditor and treasurer of each county in the state shall jointly receive for such service as they may perform under this act, in accordance with their instructions from the auditor, treasurer, and secretary of state, a sum equal to five per centum on all moneys received and paid over by them upon the first three hundred and twenty acres of scrip sold, three per cent. on all moneys so received and paid over for the next three hundred and twenty acres sold, and one per cent. on all receipts for sales after six hundred and forty acres have been sold; and it is hereby made the duty of the auditor and treasurer of each county in the state to perform such services as may be required of them by the auditor, treasurer, and secretary of state, under this act; and the aforesaid county officers shall be paid by the auditor of state out of the money hereinafter appropriated for such purpose.

SEC. 5. Said auditor, treasurer, and secretary of state, on or before the first day of December next, shall make to the governor a full and explicit report of their proceedings under this act; which report the governor shall communicate to the general assembly at its next session. [*Repealed April 5, 1866.*]

SEC. 6. All money received from the sale of land scrip shall be paid into the state treasury, and shall be appropriated and used by the commissioners of the sinking fund for the reduction and payment of the other public debt of the state.

SEC. 7. Upon the amount of money so received for the sale of scrip appropriated for and to be used in the reduction of the other public debt of the state as aforesaid, there shall be allowed, and paid semi-annually on the first days of July and January in each year, interest at the rate of six per cent. per annum; which shall be appropriated as provided in the act of congress approved July 2d, 1862, "to the endowment, support, and maintenance of at least one college, where the leading object shall be—without excluding other scientific and classical studies, and including military tactics—to teach such branches of learning as are related to agriculture and the mechanic arts;" and for the prompt and regular payment of said interest, the preservation and appropriation of said fund, and the strict observance and fulfillment of the act of congress before referred to, the faith of the state is hereby irrevocably pledged.

SEC. 8. The commissioners of the sinking fund are hereby authorized and empowered, as fast as the sinking fund will enable them to do so, to reduce the debt called the "agricultural fund," by the purchase of stocks of the United States or of this State, yielding not less than six per centum upon the par value of said stocks, which stocks, when so purchased, shall be transferred to the "state of Ohio, in trust for the agricul-

tural college," and shall be deposited with the treasurer of state, and when so purchased, transferred, and deposited, shall, to the extent of the amount paid for such stocks, reduce the debt thereby created and denominated the "agricultural fund."

SEC. 9. There shall be appointed by the governor, by and with the advice and consent of the senate, five commissioners, no two of whom shall be residents of the same congressional district; two of whom shall be selected so as to represent the agricultural, and two representing the mechanical and manufacturing interests of the state, who shall be required to take and indorse upon their certificates of appointments an oath or affirmation to honestly and faithfully perform the duties imposed by this act; one of said commissioners shall be selected with reference to his military knowledge. [*Repealed.*]

SEC. 10. Said commissioners, after full examination, shall report to the governor by the first of December next, their opinion as the place for locating said college or colleges; and in forming such opinion, said commissioners shall consider the accessibility of such location to all parts of the state, by the ordinary means of travel, the inducements which may be offered by any locality in the way of donations of land, buildings, money, or other valuable property, for said college or colleges, the practicability of procuring, at reasonable expense, the necessary quantity of land adapted to the use of an experimental farm, with such other considerations as should have influence in the selection of such location. Said commissioners shall also consider and report any propositions which are now or may, within six months, be made, with the inducements offered for the establishment of more than one such college or colleges. [*Repealed April 5, 1866.*]

SEC. 11. Said commissioners shall prepare and submit a detailed plan for the organization of said college or colleges, and the necessary buildings therefor. It shall embrace the proper control and management of the property, the necessary structures, implements and stock of the farm; the branches and their respective divisions of learning to be taught; the course of studies to be pursued, and their terms and extent; the professorships required to be established; the character and extent of experimental husbandry upon the farm; the propriety and feasibility of connecting experimental studies in the mechanic arts; the probable expenditures for these respective purposes, and the probable annual expenses of conducting said institution; with such other matters as they may deem important or valuable as connected therewith. [*Repealed April 5, 1866.*]

SEC. 12. Said commissioners shall submit to the governor, by the first day of December next, their said plan of organization, with a full report of their proceedings under the requirements of this act, which the governor shall communicate to the general assembly at its next session. [*Repealed April 5, 1866.*]

SEC. 13. Said commissioners shall receive no compensation for their services, but may be allowed their necessary expenses in the discharge of their official duties. [*Repealed April 5, 1866.*]

SEC. 14. For the purpose of carrying into effect the provisions of this act, the sum of five thousand dollars is hereby appropriated from any money in the treasury not otherwise appropriated. [*Repealed April 5, 1866.*]

SEC. 15. This act shall take effect and be in force from and after its passage.

In a report to the Governor, dated December 20th, 1865, the commissioners announce the sale of scrip for 11,360 acres, and declare their opinion that, unless greater powers should be conferred upon them, the scrip of Ohio would not all be sold in less than ten years, as other States were selling similar scrip below the minimum price to which they were confined.

In accordance with this suggestion and these facts, the Legislature passed an act on April 5th, 1866, to amend the act aforesaid, so as to remove the restriction of a minimum price of eighty cents per acre.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That section one of the aforesaid act be amended so that the same shall read as follows: Section 1. That the auditor, treasurer, and secretary of state are hereby authorized and directed to advertise, as often as they may deem the same advisable, and in such form as to them may seem proper and necessary to the prompt disposition of the land scrip received from the United States for the establishment of an agricultural and mechanical college or colleges in the state of Ohio, for proposals for the purchase of the same, in quantities not less than one hundred and sixty acres, such proposals for purchase to be made either to said auditor, treasurer, and secretary of state, or to the auditor and treasurer of any county of the state, subject to the limitations and restrictions from time to time fixed by said auditor, treasurer, and secretary of state, not inconsistent with this act.

SEC. 2. That section two of the aforesaid act be so amended as to read as follows: Section 2. Said auditor, treasurer, and secretary of state are hereby authorized to sell or cause to be sold said land scrip at the best price they can obtain for the same, and to employ a suitable person or persons to aid them in making such sales, and to pay to such persons such commissions on sales made by them, as they may deem adequate to secure prompt and vigorous efforts to effect sales. And they are further authorized to accept propositions for the purchase of said scrip in quantities not less than fifty thousand acres of land, on terms of payment of not less than one-fourth in hand, and the remainder in payments not more extended than one-fourth in two years, one-fourth in four years, and the remaining one-fourth in six years; or in quantities of not less than ten thousand acres of land, on the following terms of payment: Not less than one-fourth in hand, and the remainder in payments not more extended than one-fourth in one year, one-fourth in two years, and the remaining one-fourth in three years, with interest on the deferred payments from the date of purchase; and the deferred payments to be secured by mortgage upon real estate situate within the state of Ohio, or deposit of the bonds of this state or of the government of the United States; *provided*, also, that all contracts to pay commissions on sales, or for the sale of scrip on time, shall be approved by the governor, in writing, before the same shall be valid and binding on the state.

SEC. 3. That section five of said act be so amended as to read as follows:

Section 5. Said auditor, treasurer, and secretary of state shall, annually, on the first Monday of December, make to the governor a full and explicit report of all their proceedings, and of the proceedings of county auditors and treasurers, under this act, which report the governor shall communicate to the general assembly at the next ensuing session thereof.

SEC. 4. That the first, second, fifth, ninth, tenth, eleventh, twelfth, thirteenth, fourteenth, and fifteenth sections of the aforesaid act be and the same are hereby repealed.

SEC. 5. This act shall take effect and be in force from and after its passage. [S. & S. 645-650.]

On December 10th of the same year the commissioners reported to the Legislature the sale of all the scrip, the great bulk of it being sold at fifty-three cents per acre. The total proceeds of the sales were \$342,450.80. This sum was paid into the State Treasury during 1866 and 1867, and interest on it was computed from the date of payment at six per cent.



The location of the College now became a subject of interest, which led to the following legislation :

#### AN ACT

Relative to the establishment of the Ohio Agricultural and Mechanical College.

**SECTION 1.** *Be it enacted by the General Assembly of the State of Ohio,* That the governor of Ohio, *ex officio*, the president of the Ohio state board of agriculture, *ex officio*, and five other persons, so chosen as to represent all the industrial classes of the state, to be appointed by the governor, with the consent of the senate, are hereby constituted a board of trustees, whose duty it shall be to receive proposals and report to the next session of this general assembly, such proposals as may have been received, and their opinion as to the place for locating an agricultural and mechanical college for the state of Ohio, in accordance with an act of congress, approved July 2, 1862, entitled "an act donating lands to the several states and territories, which may provide colleges for the benefit of agriculture and the mechanic arts."

**SEC. 2.** Said trustees are hereby authorized to receive proposals for donations of land, building, and money in trust for the state of Ohio, for the location and establishment of a college as contemplated by the act of congress referred to in the first section of this act.

**SEC. 3.** The trustees shall receive no *per diem*, but shall have all their necessary expenses paid while actually in the service of the state.

**SEC. 4.** This act shall take effect from and after its passage, and the governor shall immediately thereafter notify said persons of their appointment, and designate a day for their meeting in the city of Columbus, for the organization of said board.

April 5, 1866. [63 v. 102.]

The trustees appointed under this act were Darwin Gardiner, David Taylor, Peter Thatcher, C. L. Poorman, and Miles Greenwood. In June, 1865, they received propositions, in regard to the location of the College, from Miami University, Oxford, and Farmers' College, near Cincinnati, and in October similar proposals from Mt. Union College, from the village of Kent, and the town of Worthington.

On the first of December, 1865, in accordance with the requirements of the act under which they were appointed, they made their report to Governor Anderson. Two reports, in fact, were presented. The majority report, signed by four of the commissioners, recommended that the land scrip, or the funds arising from its sale, should be equally divided, and that half should be devoted to the reorganization of Miami University, so that its courses of study should be brought into harmony with the terms of the congressional grant, and that the other half should be devoted to the endowment of a college in the northern part of the State in the interests of agriculture and the mechanic arts. The minority report, presented by Miles Greenwood, recommended the acceptance of the proposition of Farmers' College. Neither report was adopted by the Legislature.

From the time when the State accepted the land grant, the use to be

made of the funds resulting from it was the subject of earnest and prolonged discussion in the Legislature, by the press, and throughout the State at large. A division of the fund among colleges already established in the State was strenuously urged by many, and as strenuously opposed by more. The State Board of Agriculture, especially, labored actively and persistently to prevent any such division.

The efforts to secure a division were gradually abandoned, as it came to be seen that public sentiment demanded the establishment of an institution unfettered by tradition, and different in character from any at the time existing in the State. By the end of the year 1867, at least, it was generally conceded that a separate and independent college must be established upon this fund.

This fund is the financial basis of the present College. It has been augmented by about forty-seven per cent. of itself through the additions of interest, simple and compound, until at the opening of the institution in 1873 it amounted to \$500,000. Its security is established by its being made a part of the irreducible debt of the State. The rate of interest which it bears is six per cent.

After the selling of the land scrip, the location and plan of organization of the future College received the prolonged attention of successive Legislatures.

On March 7, 1868, a joint resolution was introduced into the House of Representatives, which was subsequently passed, appointing a joint committee from the Senate and the House of Representatives, with authority to receive propositions for the location of the College, and to report the same to the Legislature. The resolution is given below:

#### JOINT RESOLUTION

To provide for taking immediate steps to agree upon the location of the Ohio Agricultural and Mechanical College, and for the appointment of a joint committee on the subject.

WHEREAS, The congress of the United States, by an act passed July 2d, 1862, entitled "an act donating public lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts," donated to the State of Ohio, land-scrip; and,

WHEREAS, The general assembly of Ohio, by an act passed February 9th, 1864 (L. of O., vol. 61, p. 7), accepted said donation, subject to all the conditions and provisions contained in said act, and pledged the faith of the state of Ohio to the performance of all such conditions and provisions; and,

WHEREAS, The state of Ohio has received from the United States, land-scrip for the purpose of establishing an agricultural college or colleges in said state; and,

WHEREAS, The said land-scrip has been sold, and there is now in the state treasury, to the credit of the agricultural college fund, the sum of \$342,450.80; and,

WHEREAS, One of the provisions of the act of congress making such donation, requires each state which may claim the benefit of said act, to provide not less than "one

college, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life;" and,

WHEREAS, The time for providing such college or colleges will expire on the 2d day of July, 1872, at which time, unless such college or colleges are provided, the grant to the state of Ohio will cease, and said state will be bound to pay the United States the amount so received; therefore, be it

*Resolved [by the General Assembly of the State of Ohio],* 1st. That it is important for the general assembly of Ohio to take immediate steps to provide one college for the objects and purposes aforesaid.

2d That to this end a joint committee of the senate and house of representatives, consisting of four on the part of the senate and eight on the part of [the] house be appointed, with authority to receive propositions for sites for the location of such college, and examine the same; also propositions for experimental farm, and proposals of donations of such sites and farms; and also donations towards the erection of suitable college buildings.

3d. That the said committee shall have authority to meet, for the transaction of business, during any adjournment of the general assembly, at such time and place as the committee may agree upon.

4th. That the said committee shall report, at as early a time as possible, by bill or otherwise.

Adopted March 30, 1868. [65 v. 292.]

The committee, at the ensuing session, reported propositions for location from Worthington, Wooster, Oxford, Urbana, London, and Newark, with liberal offers of donations of land and money from each of the competing towns. Majority and minority reports were brought in, the former recommending the acceptance of the proposition of Urbana, and the latter of Wooster.

Neither report secured favorable action in the Legislature. Various attempts to settle the questions involved were afterwards made without success, until, in March 22, 1870, a bill was passed by the Legislature, the date of which may be taken as the initial date of the present institution.

Before that date, however, the following legislation was had:

#### AN ACT.

To authorize the investment of interest accumulating on the agricultural college fund.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That the auditor of State be and is required to compute the interest which has accrued and will accrue on the agricultural college scrip fund since the same has been sold, to July first, one thousand eight hundred and seventy, compounding the same by semi-annual rests on the first day of January and the first day of July in each year; and on the fifteenth day of June, eighteen hundred and seventy, to transfer the sum so arising to the said college fund, and invest the same in the interest bearing bonds of the state, in the same manner as the principal of the said fund is now invested.

SEC. 2. That on the first day of July, eighteen hundred and seventy, and every six months thereafter (viz., on the first day of January and July respectively), the auditor of state shall invest the interest of said funds falling due in the same manner as the principal is now invested.

SEC. 3. This act to take effect and be in force from and after its passage.

Passed February 10, 1870. [67 v. 15.]

The following is the act referred to as constituting the initial date of the College:

#### AN ACT

To establish and maintain an agricultural and mechanical college in Ohio.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That a college, to be styled the Ohio Agricultural and Mechanical College, is hereby established in this state, in accordance with the provisions of an act of congress of the United States, passed July 2d, 1862, entitled "an act donating public lands to the several states and territories which may provide colleges for the benefit of agricultural and mechanic arts," and said college to be located and controlled as hereinafter provided. The leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agricultural and mechanic arts.

SEC. 2. The government of said college shall be vested in a board of trustees, to consist of one from each congressional district of this state, who shall be appointed by the governor, by and with the advice and consent of the senate. The president of the state board of agriculture shall be ex-officio member of said board. [*Repealed April 16, 1874.*]

SEC. 3. The members of the board of trustees, and their successors, shall hold their office for the term of six years each; provided, that at the first regular meeting of said board, the said members shall determine by lot, so that as nearly as may be one-third shall hold their office for two years, one-third for four years, and one-third for six years from the date of the first meeting of the board, or until their successors are appointed and qualified. In case a vacancy occurs by death, resignation or otherwise, the appointment shall be for the unexpired term. The trustees shall receive no compensation for their services, but shall be entitled to reasonable and necessary expenses while in the discharge of their official duties. [*Repealed April 16, 1874.*]

SEC. 4. The trustees and their successors in office shall be styled the "Board of trustees of the Ohio Agricultural and Mechanical College," with the right as such of suing and being sued, of contracting and being contracted with, of making and using a common seal, and altering the same at pleasure.

SEC. 5. The board of trustees shall have power to adopt by laws, rules, and regulations for the government of said college; to elect a president; to determine the number of professors and tutors, elect the same, and fix their salaries. They shall also have power to remove the president or any professor or tutor whenever the interests of the college, in their judgment, shall require; to fix and regulate the course of instruction, and to prescribe the extent and character of experiments to be made.

SEC. 6. The board of trustees shall annually appoint an executive committee of not less than three of their own members, who, when said board is not in session, shall have the management and control of the affairs of said college, under the direction of the board, and shall furnish a full report of their proceedings at every regular meeting of the board, and at such other times as the board may direct. [*Repealed April 16, 1874.*]

SEC. 7. The college shall be open to all persons over fourteen years of age, subject to such rules and regulations and limitations, as to members from the several counties of the state, as may be prescribed by the board of trustees; provided that each county shall be entitled to its just proportion, according to its population. The board may provide for courses of lectures, either at the seat of the college or elsewhere in the state, which shall be free to all.

SEC. 8. The board of trustees shall have the general supervision of all lands, buildings, and other property belonging to said college, and the control of all expenses therefor: provided always that said board shall not contract any debt not previously authorized by the general assembly of the state of Ohio.

SEC. 9. The board of trustees shall annually elect one of their number chairman, and in the absence of the chairman shall elect one of their number temporary chairman, and shall have power to appoint a secretary, treasurer, and librarian, and such other officers as the interests of the college may require, who may or may not be members of the board, and shall hold their offices for such term as said board shall fix, subject to removal by said board, and shall receive such compensation as the board shall prescribe. The treasurer shall, before entering upon the duties of his office, give bond to the state of Ohio in such sum as the board may determine, which bond shall not be for a less sum than the probable amount that will be under his control in any one year, conditioned for the faithful discharge of his duties and the payment of all moneys coming into his hands, said bond to be approved by the attorney general of the state.

SEC. 10. The board of trustees shall have power to secure a collection of specimens in mineralogy, geology, zoölogy, botany, and other specimens pertaining to natural history and the sciences; and it shall be the duty of the chief geologist of the state to collect and deposit in such place as the trustees may direct, a full and complete set of specimens as collected by him or his assistants, for the benefit of said college. The board shall make provision for a library, apparatus, and arms and accoutrements, and for increasing and preserving the same. [*Repealed April 20, 1877.*]

SEC. 11. The board of trustees shall have power to receive and hold in trust, for the use and benefit of the college, any grant or devise of land, and any donation or bequest of money or other personal property, to be applied to the general or special use of the college; all donations or bequests of money shall be paid to the state treasurer, and invested in the same manner as the endowment fund of the college, unless otherwise directed in the donation or bequest.

SEC. 12. The first meeting of the members of the board shall be called by the governor as soon after the appointment of said board as he may deem advisable, to be held at Columbus, Ohio; all succeeding meetings shall be called in such manner as said board may prescribe; said board shall meet at least once annually at the college building. A majority of the board of trustees shall constitute a quorum to do business; provided, it shall require a majority of all the board to elect or remove a president or professor. [*Repealed April 20, 1877.*]

SEC. 13. The title for all lands for the use of said college, shall be made in fee simple to the state of Ohio, with covenants of seizin and warranty, and no title shall be taken to the state for purposes aforesaid until the attorney general shall be satisfied that the same is free from all defects and incumbrances.

SEC. 14. The board of trustees shall cause a report to be made annually to the governor, of the condition of said college; the amount of receipts and disbursements, and for what the disbursements were made; the number of professors, teachers, and other officers, and the position and compensation of each; the number of students in the sev-

eral departments and classes, and the course of instruction pursued in each ; also, an estimate of the expenses of the ensuing year ; a full transcript of the journal of the proceedings of the board for the past year, the progress of said college, recording any improvements and experiments made, with their cost, and the results, and such other matters as may be supposed useful ; one copy, when printed and bound, shall be transmitted by mail, free, to all other colleges which may be endowed under the provisions of said act of congress, and also one copy to the secretary of the interior. [*Repealed April 20, 1877.*]

SEC. 15. The attorney general of the State shall be the legal adviser of said board of trustees, and he shall institute and prosecute all suits in behalf of the same, and shall receive the same compensation therefor as he is entitled to by law for suits brought in behalf of the asylums of the state.

SEC. 16. All funds, together with the interest now accumulated thereon, derived from the sale of land scrip issued to the state of Ohio by the United States in pursuance of the act of congress aforesaid, shall be invested in registered bonds of the state of Ohio, or of the United States, by the authority now having control of the same ; which bonds shall be and remain in the custody of the state treasurer intact, unless one-tenth shall be appropriated by the general assembly for the purchase of land, as provided in the act of congress, who shall pay over the income thereof as it may accrue to the treasurer of said college upon the order of the auditor of state, made upon the requisition of the board of trustees ; to be by the board of trustees appropriated to the endowment, support, and maintenance of the college, as provided in the act of congress as aforesaid. [*Repealed April 20, 1877.*]

SEC. 17. It shall be the duty of the board of trustees to permanently locate said Agricultural and Mechanical College upon lands, not less than one hundred acres, which in their judgment is best suited to the wants and purposes of said institution, the same being reasonably central in the state, and accessible by railroad from different parts thereof, having regard to healthiness of location, and also regarding the best interests of the college in the receipt of moneys, lands or other property donated to said college by any county, town or individual, in consideration of the location of said college at a given place : Provided, it shall require a three-fifths vote of the trustees to make said location ; and provided further, that said location shall be made on or before the fifteenth day of October, 1870 ; provided further, that any person acting as a trustee, who shall accept or receive, directly or indirectly, any sum or amount from any person or persons, to use their influence in favor of the location of said college at any particular point or place, shall be held to be guilty of a misdemeanor, and on conviction thereof by any court of competent jurisdiction, shall be fined in any sum not less than one thousand nor more than ten thousand dollars ; provided further, that in the location of said college the said trustees shall not in any event incur any debt or obligation exceeding forty thousand dollars ; and if, in their opinion, the interests of the college can not be best promoted without a larger expenditure for the location than that sum, then they may delay the permanent location of the same until the third Monday of January, 1871, and report their proceedings and conclusions to the general assembly ; provided further that said college shall not be located until there are secured thereto for such location, donations in money or unincumbered lands at their cash valuation, whereon the college is to be located, or in both money and such lands, a sum equal to at least one hundred thousand dollars.

SEC. 18 This act shall take effect and be in force from and after its passage:

Passed March 22, 1870. [67 v. 20.]



Under this act a board of nineteen Trustees was appointed by Governor R. B. Hayes, and his appointments were confirmed by the Senate. The following gentlemen composed the Board, arranged in the order of their Congressional Districts:

1st District	.....	Aaron F. Perry.
2d	" .....	Joseph F. Wright.
3d	" .....	Richard C. Anderson.
4th	" .....	William B. McClung.
5th	" .....	William Sawyer.
6th	" .....	James M. Trimble.
7th	" .....	Joseph Sullivant.
8th	" .....	Thomas C. Jones.
9th	" .....	Warren P. Noble.
10th	" .....	James W. Ross.
11th	" .....	Ralph Leete.
12th	" .....	Daniel Keller.
13th	" .....	Marvin M. Munson.
14th	" .....	Norton S. Townshend.
15th	" .....	Valentine B. Horton.
16th	" .....	John C. Jamison.
17th	" .....	Cornelius Aultman.
18th	" .....	John R. Buchtel.
19th	" .....	Henry B. Perkins.

The Board held its first meeting in Columbus on May 11, 1870, and effected a permanent organization by the election of Valentine B. Horton, President; R. C. Anderson, Secretary; and Joseph Sullivant, Treasurer.

By the following legislative act, passed April 18, 1870, the several counties of the State were authorized to raise money to secure the location of the College:

#### AN ACT

To authorize the several counties of the state to raise money to secure the location of the Ohio Agricultural and Mechanical College.

**SECTION. 1.** *Be it enacted by the General Assembly of the State of Ohio,* That the commissioners of any county in this state desiring to secure the location of the Ohio Agricultural and Mechanical College by making donations therefor, are hereby authorized and empowered to raise money for such donation by tax on all taxable property in such county, as listed on the county duplicate for taxation, the amount of which proposed donation shall be fixed by said commissioners.

**SEC. 2.** That such tax shall not exceed two mills on the dollar of the taxable property of the county in any one year, nor shall the aggregate of all levies for such purposes exceed ten (10) mills on the dollar.

**SEC. 3.** No such tax shall be levied or donation made until the question as to the amount to be donated has first been submitted by the county commissioners to the qualified voters of such county at some general or special election, a notice of which (specifying the amount to be donated) has been given at least thirty days previous to said

election, in one or more newspapers published and in general circulation in the county; which election shall be held at the usual places of holding elections, and conducted in all respects, as far as may be, as other elections, except that the returns shall be made to the county commissioners, at the auditor's office; and those voting at such election in favor of said tax, shall have written or printed on their ballots the words "College Tax—Yes," and those voting against same, the words "College Tax—No." And said commissioners shall meet at said auditor's office on the fourth day next after the said election, and canvass the votes; and if it appear that said tax is approved by a majority of the qualified electors voting at such election, then it is hereby made the duty of the county commissioners of said county to levy a special tax on all the taxable property of said county, to raise the sum donated by said vote, in accordance with section two of this act; and the money arising therefrom, when collected, shall be applied to no other purpose but the payment of bonds and interest as hereinafter provided for; and said special tax shall be entered upon the county duplicate, and be collected in like manner as other taxes are collected.

SEC. 4. That to anticipate the collection of the tax authorized by this act, and the use of the money to be raised thereby, the county commissioners, on the acceptance of the donation herein contemplated, are hereby authorized and required to issue and negotiate the bonds of such county, in sums of not less than five hundred dollars each, payable (within ten years) at such times, and bearing interest at a rate not exceeding eight per cent., payable semi-annually, as the commissioners shall determine, which bonds shall not be sold or donated at less than their par value; and the proceeds thereof shall, on their receipt, be paid by said commissioners to the treasurer of said college to the amount of said donation.

SEC. 5. This act shall take effect and be in force from and after its passage.

Passed April 18, 1870. [67 v. 95.]

On June 4 of the same year the Executive Committee of the Board of Trustees issued an address to the people of the State, prepared by Hon. V. B. Horton, President of the Board, and chairman of said committee, setting forth the aims, purposes, and wants of the Ohio Agricultural and Mechanical College, and inviting the citizens of the State, through their counties, to raise the necessary funds for providing land, buildings, and outfit for the College.

The following named counties competed for the location under the above act: Champaign, Clarke, Franklin, Montgomery.

Champaign county offered \$200,000, in 8 per cent. county bonds; Clarke offered the same amount; Franklin offered \$300,000, in 7 per cent. bonds, and Montgomery offered, by pledges of several of her prominent citizens, \$400,000, in 8 per cent. bonds. After prolonged and thorough discussion, the proposition of Franklin county was accepted, and on October 13, 1870, the College was located within the limits of the city of Columbus, on a farm of about 317 acres of excellent land. The donation from Franklin county was increased by contributions from citizens of Columbus, and by two of the railroads entering here, to the amount of about \$28,000. The railroad companies contributing were the Cleveland, Col-



umbus and Indianapolis Railroad, and the Pittsburgh, Cincinnati and St. Louis Railroad.

A site for a College building was selected, and architects were invited to furnish plans for such building. The plan prepared and offered by Mr. Jacob Snyder, of Akron, was finally adopted, and the building was put under contract, to be completed in 1872, at a cost of \$112,450. A boarding-hall and dormitory was also ordered, at an estimated cost of \$20,000, at a somewhat later date. A second dormitory, providing accommodations for twenty students who may desire to board themselves, has been since erected.

The character of the College building can be learned from the following description by the architect:

The Agricultural and Mechanical College of Ohio is designed, when completed, to be a three-story building, besides the basement and attic, and is to be of brick, with stone dressings, above the basement story. The latter is to be entirely of stone, elevated seven feet nine inches from the grade line, thus admitting ample light to accommodate the lower apartments. The attic story extends partly into the roof space, and is well lighted by means of gable windows. The plan of the building is made up of a central building having two connecting and two terminal wings. The central building is sixty-seven feet front by one hundred and nine feet deep, including the projection of the main tower on the front, which is eight feet from the face of the front wall. The main tower has a base of twenty-one feet six inches square besides the projections of buttresses, and a height of one hundred and four feet to the top of crown. The central building is flanked by the two connecting wings, which are forty-one feet front by fifty-eight feet deep. The height of the connecting and terminal wings, except their roofs, is equal, and from grade line to top of crown is fifty-four feet and nine inches. The height of the central building from corresponding points is fifty-eight feet three inches. The front portion of central wing, on its first main floor, contains the office and reception room, the College library room, and their complemental apartments. The upper stories of this portion of the central building are to be occupied by recitation and professors' rooms.

The rear of the central building contains two large amphitheatres of fifty-one by sixty-seven feet, occupying the entire height of the three principal stories. The elevated roof of this portion of the building affords sufficient height to admit of two society halls in the attic, so arranged as to be used conjointly for the purposes of one large hall if desired. The connecting wings, besides their complemental apartments, contain professors' rooms in all their principal stories. The terminal wings have no divisions above the basement, the rooms being the entire size of the wings within their walls. They are designed to be used as recitation and work-rooms. The apartments of the basement not required for heating are designed to be used for purposes similar to those of the terminal wings.

The building, including the projections of the buttresses, has a frontage of two hundred and thirty-five feet, and will accommodate from four to five hundred students.

The dormitory and boarding-hall provides accommodations for seventy-five students.

The plan of study to be pursued in the College was made the subject of very earnest discussion in the Board of Trustees from the date of its organization. Quite divergent views were at first held by different members, but on January 6, 1871, they united in adopting the general plan presented and advocated by Joseph Sullivant, Esq., of Columbus. This plan had for its aim the establishment of a scientific school of a liberal character. The following departments were included in it:

1. Agriculture.
2. Mechanic Arts.
3. Mathematics and Physics.
4. Chemistry.
5. Geology, Mining, and Metallurgy.
6. Zoölogy and Veterinary Science.
7. Botany and Horticulture.
8. English Language and Literature.
9. Modern and Ancient Languages.
10. Political Economy and Civil Polity.

It was not designed in the action taken that these subjects should necessarily stand in the same connections in which they are here placed, but only that the general range of instruction thus indicated should be offered by the College. In point of fact, but few of the departments have been permanently established within the limits named above, but all of these subjects, and more, are now taught in the College, as will presently appear. To Mr. Sullivant was also assigned the equipment of laboratories and cabinets, a fund of \$25,000 being set aside for this general purpose, including the necessary furniture of the building. It is but justice to add that to his intelligent and unselfish interest the College owes a large debt, both for the breadth of its plan of organization and the equipment with which its departments have been supplied.

The two following acts find place here:

#### AN ACT

To provide for an appropriation from the Agricultural and Mechanical College Fund, and authorizing the deposit in the State Treasury of certain bonds.

WHEREAS, The board of trustees of the Ohio agricultural and mechanical college has bargained for the purchase of several tracts of land in Franklin county, Ohio, the payment for a part of which is to be made in money, and they have not the money with which to make such payment; and whereas said board holds the seven per cent. coupon bonds of Franklin county to a large amount, issued in pursuance of an "act to authorize the several counties of the State to raise money to secure the location of the Ohio agricultural and mechanical college," passed April 18, 1870 (67 O. L., p. 95), and upon which bonds said board can not at this time realize an amount of money sufficient to pay for such purchase without great sacrifice thereon; therefore,

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That there be and hereby is appropriated from and out of the Ohio agricultural and mechanical college

fund the sum of thirty-four thousand two hundred and forty-five dollars, being an amount equal to and not exceeding ten per centum upon the principal of said fund as derived from the sale of land scrip received by the state of Ohio under and by virtue of an "act of Congress donating lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts," approved July 2, 1862; this appropriation being made for the purpose of paying for lands purchased as referred to in the preamble of this act.

SEC. 2. That before any of said money shall be drawn from the treasury, the said board of trustees shall deposit with the treasurer of state said bonds of Franklin county equal in amount to the amount appropriated in the foregoing section, to be credited to the agricultural and mechanical college fund, and the coupons of which, as they become due, shall be collected by said treasurer of state and placed to the credit of said college fund as soon as such deposit shall have been made. The trustees of said college are authorized to make requisitions for the amount of money above appropriated, and the treasurer of state is required to pay the same upon presentation of proper vouchers as required by law, and said board shall use the same in payment for the purchase above specified in accordance with the provisions of the act of Congress before referred to: provided, that the said college fund shall be reimbursed in the sum of thirty-four thousand two hundred and forty-five dollars with interest above appropriated, whenever the said bonds referred to in this act shall have matured and been paid. If said bonds shall not be paid at maturity, the treasurer of state shall proceed to collect or sell the same at par value and apply the proceeds thereof to the reimbursement of said fund; and provided further, that no warrant shall be issued by the auditor of state for the payment of any money appropriated by the provisions of this act, until the executive committee of said board of trustees have filed their certificate with the said auditor that the commissioners of Franklin county have fully executed their contract with said board in reference to the donation of three hundred thousand dollars by said county to said agricultural and mechanical college; provided still further, that this act shall not be construed to operate as a guaranty by the state of the payment of the said bonds of Franklin county, or as creating any obligation on the part of the state to repay to said fund any part of the sum herein appropriated beyond the amount that may be realized on said bonds.

SEC. 3. This act to take effect on its passage.

Passed January 20, 1871. [68 v. 13.]

#### AN ACT

Prescribing the duties of the trustees of the Ohio Agricultural and Mechanical College, in relation to the erection of buildings and making other improvements upon the grounds purchased for the location of said college.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That before any contract shall be made for the erection of any building for the Ohio agricultural and mechanical college, the executive committee of the board of trustees shall cause to be made full and accurate plans of such buildings in detail, with proper working plans and full specifications of the work, showing the manner and style in which the same will be required to be done, and to make or cause to be made a full and complete estimate of each item of expense, and the entire aggregate cost of such building, and submit the same to the board of trustees of said college for approval; and if the same are approved at a meeting of said board, contracts may be made in pursuance thereof; provided, they are drawn and approved by the attorney-general; provided further, that in all cases of contracts involving an expenditure of five thousand dollars, or any larger sum, either for labor or materials for any of the college buildings, the trustees shall cause notice to

be published for not less than three weeks, of the time and place when and where sealed proposals will be received for performing such labor or furnishing such materials, and where plans and specifications of the work to be done, or a description of the materials to be furnished, may be seen; and it shall be the duty of the trustees, or the executive committee, to award such contract or contracts to the lowest bidder or bidders, who shall give satisfactory security to perform the work or furnish the materials in accordance with the plans, specifications and descriptions as herein required. if, in the judgment of the trustees, or the executive committee, such persons are able and competent to perform such labor or furnish such materials, in accordance with the terms of the proposed contracts and the provisions of this act. In case no bids shall be received upon the publication of such notice complying in all respects with the provisions of this act, the trustees, or the executive committee, may cause such work to be done or materials to be furnished by other parties, subject to the conditions of this act; and no officer of said institution shall be directly or indirectly interested in said contract or contracts.

SEC. 2. No contract shall be made for labor or material as herein provided at prices in excess of the estimates in this act required to be made, or in excess of the ordinary and prevailing market prices for such labor or materials.

SEC. 3. No contract shall be made, plans adopted, or liability incurred for the erection of any building, or for other improvements on the college farm, or for the purchase of stock or implements, involving in the aggregate a greater expenditure of money than the amount remaining of the Franklin county subscription, after the payment of the purchase money for the lands bought for the use of the college; nor shall said trustees contract any debt for any purpose in excess of the money provided for its payment.

SEC. 4. This act shall take effect on its passage.

Passed April 12, 1871. [68 v. 56.]

The selection of a Faculty commanded the early attention of the Board. On March 10, 1871, a virtual offer of the presidency of the institution was made to General Jacob D. Cox, of Cincinnati, but the offer was declined. The committee on Faculty next reported the name of Hon. James W. Patterson, formerly professor in Dartmouth College, and, at the time representing New Hampshire in the Senate of the United States, for this position. Mr. Patterson was elected to the office on October 10, 1872, but after holding the matter for some time under advisement, he also declined the appointment.

The following named gentlemen were elected professors at a meeting of the Trustees held on January 2, 1873:

Thomas C. Mendenhall, of Columbus, Professor of Physics and Mechanics.

Sidney A. Norton, of Cincinnati, Professor of General and Applied Chemistry.

Edward Orton, of Yellow Springs, Professor of Geology, Mining, and Metallurgy.

Joseph Millikin, of Hamilton, Professor of English and Modern Languages.

W. G. Williams, of Delaware, Professor of Latin and Greek Languages.

At the same meeting of the Trustees, but at a somewhat later date, Norton S. Townshend, of Avon, was elected Professor of Agriculture, he having previously resigned his position on the Board of Trustees to accept it.

Professors Mendenhall, Norton, Millikin, and Townshend accepted their appointments. Professor Williams also signified his acceptance, but was subsequently released at the request of the Trustees of the Ohio Wesleyan University, with which he was at the time connected. Professor Orton declined the Professorship of Geology, but in April succeeding the Presidency of the institution was offered to him, which he accepted in May. The Professorship of Geology was also assigned to him.

During the summer of 1873, Professor R. W. McFarland, of Oxford, was called to the Professorship of Mathematics, and the subject of Civil Engineering was also assigned to his department.

Mr. John H. Wright, a recent graduate of Dartmouth College, was appointed Assistant Professor in the Department of Languages, and to him were assigned all of the classes in Latin and Greek.

The College was opened for the reception of students on September 17, 1873.

In January, 1874, Prof. Albert H. Tuttle was appointed by the Executive Committee to the chair of Zoölogy, and in June the appointment was confirmed by the Board. At the same time, Thomas Mathew, of Columbus, was appointed Instructor in Drawing, Free-hand and Mechanical, and also in Photography and Lithography. In June, 1875, William Colvin, of Cincinnati, was appointed Professor of Political Economy and Civil Polity, and the Science of Accounts was also assigned to his department. Miss Alice Williams was, at the same time, made an assistant in the Department of English and Modern Languages.

A single section of an act pertaining to the State Geological Survey here finds place :

#### AN ACT

To complete the Geological Survey of the State of Ohio.

**SEC. 7.** The geological board shall see that the minerals, soils, and fossils of the state, collected during the survey, be properly classified and labeled by the geologists or such paleontologists as may be employed, and given to the Agricultural and Mechanical College of Ohio, and duplicates, as far as practicable, to each other college in the state authorized by its charter to confer degrees, and possessing a geological department and employing a professor of geology. [Act of April 29, 1872; 69 v. 202.]

Three acts relating to the sale of unsurveyed lands in the Virginia Military District of Ohio are next introduced—the first two, which have been subsequently repealed, by title only :

#### AN ACT

To sell land ceded to the State by the United States, by act of Congress, approved February 19th, 1871.

Passed March 26, 1872. [69 v. 52.]

1873.

## AN ACT

Supplemental to, and amendatory of, the act entitled "An act to sell lands ceded to the State of Ohio by the United States, by act of Congress approved February (19) 18, 1871, passed March 26, 1872.

Passed April 29, 1872. [69 v. 204.]

*Repealed April 3, 1873.*

## AN ACT

Accepting the act of Congress of the United States, approved February 18, 1871, ceding to the State of Ohio certain lands in the Virginia Military District, and to provide for the disposal of the same, and to repeal certain acts hereinafter mentioned.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the unsurveyed and unsold lands ceded to the state of Ohio by a certain act of congress of the United States, approved February 18th, 1871, situate and being in the Virginia Military District between the great Scioto and the Little Miami rivers, in said state, be and the same are hereby accepted by the state of Ohio, subject to the provisions of said act.

SEC. 2. That the trustees of the Ohio Agricultural and Mechanical College are hereby authorized to demand from all persons who have destroyed or converted any timber growing upon the lands ceded to the state of Ohio, as stated in the act to which this is supplementary, since the date of said act of congress ceding said lands to the state of Ohio, full compensation for the timber so destroyed or converted, and for all damages, and if payment shall be refused, to institute proper proceedings in the name of said Ohio Agricultural and Mechanical College, in any court of competent jurisdiction, to recover the same, with damages and the cost of suit: provided, that the provisions of this section shall not apply to timber taken from the one hundred and sixty acres by any person who shall obtain the title to the same under section three of this act.

SEC. 3. The title of said lands is hereby vested in the trustees of the Ohio Agricultural and Mechanical College, for the benefit of said college; and said trustees are hereby required to cause a complete survey of said lands to be immediately made, and a correct plat thereof to be returned to said trustees, and to ascertain and set off, in reasonably compact form, by accurate boundaries to each occupant who was in actual possession of and living upon any of said lands at the time of the passage of said act of congress, as provided therein, or their heirs and assigns, a tract not exceeding forty acres; and upon the payment, by the claimant, of the cost of surveying and making the deed, the said trustees shall make and deliver to said claimant a deed for said tract; and if any such occupant shall have been in such actual possession of more than forty acres, and is desirous of holding the same, he shall be entitled to have, in addition to said forty acres, any number of acres not exceeding, with said forty acres, the number of one hundred and sixty acres, to be in reasonably compact form, by paying for the said excess over forty acres, the sum of one dollar per acre; and if any claimant under the provisions of this act shall desire to purchase any tract of land adjoining said forty acres, not exceeding, including said forty acres, the amount of one hundred and sixty acres, of which said claimant shall have been in actual possession, but does not desire to purchase the same at one dollar per acre, said trustees, upon notice by said claimant, shall cause said tract or part of tract to be sold separate from other tracts of land at a valuation fixed upon by the appraisers named in this act, payable one-third at the date of the survey, and the residue in two equal annual installments, with interest at six per cent., payable annually, and upon full payment being made with the cost of survey and conveyance, said trustees shall make and deliver to such claimant, his or her heirs or assigns, a deed for said excess over said forty acres: provided, that any person claim-



ing the benefit of the provisions of this section as occupant, shall comply in all respects with, and be subject to the provisions of the thirteenth section of the act of congress, approved September 4, 1841, entitled an act to appropriate the proceeds of the sales of the public lands and to grant pre-emption rights, and to the rules and regulations of the general land office of the United States relating to proof for the establishment of pre-emptor's claims: provided, however, that the affidavit required by said thirteenth section of said act of congress may be made before any justice of the peace or other officer authorized to administer oaths.

SEC. 4. All the unsurveyed and unsold lands in said military district, not occupied as aforesaid, shall be divided by said trustees into such tracts, not exceeding five hundred acres in any one boundary, as will be most advantageous, reference being had to the quality of said lands and the uses to which they will be applied; the boundaries to all such tracts and divisions shall be accurately surveyed, and the lines of each tract plainly marked, and substantial stone monuments firmly placed at the principal corners. The character of the soil, water-courses, elevation of hills, timber, ledges, or stratas of the Waverly building stone, iron ore, fire-clay, and limestone, shall be fully noted by the surveyors on their plats and in their field-books. All the tracts so divided and surveyed shall be numbered in consecutive order, commencing with the tracts in Adams county, and so continuing until all said lands in said district shall be platted and numbered; which numbers shall be shown upon the plats, and the said plats shall correctly indicate all township lines. The said lands, when so divided, surveyed, and numbered, shall be appraised in separate tracts at their true value in money, by three qualified freehold residents in said state, to be summoned by said trustees, or any committee of theirs. Said appraisers, before entering upon their duties, shall take and subscribe an oath before competent authority honestly and impartially to appraise all such lands, and to perform all other duties in relation thereto; they shall each be paid two dollars a day for their services, and their expenses allowed them; they shall make due return of all their appraisements to said trustees, which, with all said plats and surveys, shall be delivered by them to the auditor of state, and the same shall be recorded in the office of said auditor in suitable books to be provided for such purpose, which, with all such original plats, surveys, and papers, shall form a part of the public records of the state in the land department of said office.

SEC. 5. And the said trustees are hereby authorized and required to sell all of said lands at public or private sale, at a price not less than the appraised value thereof, on such terms for cash and credit as may be agreed upon between the purchaser and said trustees or any authorized agent of theirs: provided, that the first payment shall, in every case, be not less than one-third of the appraised value of such tract; all deferred payments shall bear six per cent. interest, to be paid annually, and said trustees may, in their discretion, extend subsequent annual payments through a period not exceeding five years. All public sales of said lands shall be by auction, at the front door of the court-house of the county in which these lands so offered lie, after having been advertised five consecutive weeks in a newspaper published and generally circulated in such county; such notices of sale shall contain a sufficient description of the premises to clearly identify the same, with a statement of the terms of payment and the amount of appraisement, and all such public sales shall be made at such times as said trustee shall deem expedient; and in case such land or any tract thereof shall not sell for the amount of the appraisement at such public sale, then upon the same being again offered as aforesaid at public sale, the same may be sold for any sum not less than three-fourths of the appraisement: provided, that no trustee of said college or appraiser of said land

shall be the purchaser of any of said lands at any such sale or sales, either directly or indirectly. The said trustees shall cause all contracts for the sale of said lands to be printed or written in a book or books, stating the consideration and terms of all sales, which said contracts shall be signed in duplicate by the said trustees or any authorized agent of theirs, and by the purchaser or purchasers, one copy of which shall be preserved in said book, and the other shall be delivered to the purchaser at the time the same shall be signed; and every purchaser shall execute his promissory note or notes, with interest, payable as aforesaid, for all deferred payments, which notes shall be non-negotiable, and payable to said college at such place or places as may be directed by said trustees; and upon full payment being made by the purchaser, his heirs or assigns, for any such land, every such person shall be entitled to receive a conveyance therefor in fee simple by deed of said trustees, executed by the president of the board, under the corporate seal of said college; and all lands disposed of under the provisions of this act shall be returned by said trustees to the auditors of the counties in which they are situate, and by them be placed on the duplicate for taxation.

SEC. 6. The proceeds of the sales of all such lands, after payment out of the same of all the necessary expenses of survey and sale, shall be certified into the treasury of said state as provided by law, and the same be placed to the credit of the irreducible fund of said college, and shall form a part of said irreducible debt of the state, on which interest shall be computed semi-annually, and paid to said college as may be ordered by the board of trustees; and they shall annually report to the governor a detailed statement of receipts and disbursements in the execution of the trusts created under the provisions of this act.

SEC. 7. The act entitled an act to sell lands ceded to the state of Ohio by the congress of the United States, by act of congress approved February 18, 1871, passed March 26, 1872, and the act supplementary thereto and amendatory thereof, passed April 29th, 1872, be and they are hereby repealed: provided, that the passage of this act shall in no wise affect the validity of the transactions of said board of trustees, or rights vested in any person, under the provisions of said acts; and this act shall take effect and be in force from and after its passage.

Passed April 3, 1873. [70 v. 107.]

Early in 1874 a reorganization of the Board of Trustees was effected by the passage of

#### AN ACT

To amend the act entitled "An act to establish and maintain an Agricultural and Mechanical College in Ohio," passed 22d March, 1870. (O. L., Vol. 67, p. 20.)

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the second section of the act entitled an act to establish and maintain an agricultural and mechanical college in Ohio, passed March 22, 1870 (67 O. L., 20), be and the same is hereby so amended as to read as follows:

Section 2. The government of said college shall be vested in a board of trustees to consist of five members, who shall be appointed by the governor of the state of Ohio, by and with the advice and consent of the senate. No trustee, or relation of any trustee, by blood or marriage, shall be elected or appointed to a professorship or any other office or position in the college, the compensation for which is to be paid out of the state treasury or the agricultural and mechanical college fund, except upon the approval of the governor.



**SEC. 2.** That section three of said act be so amended as to read as follows :

**Section 3.** The members of the board of trustees and their successors shall hold their office for the term of five years from the first day of May, 1874 : Provided, that one of said trustees shall hold his office for one, one for two, one for three, one for four and one for five years, said terms to be designated by the governor in making said appointments, and at the expiration of the first year, and every successive year thereafter, one trustee for five years shall in like manner be appointed. In case any vacancy occurs, by death or otherwise, the appointment shall be for the unexpired term. The trustees shall receive no compensation for their services, but shall be entitled to reasonable and necessary expenses while in the discharge of their official duties.

**SEC. 3.** Sections two, three and six of said act are hereby repealed.

**SEC. 4.** This act shall take effect from and after the first day of May, 1874.

Passed April 16, 1874. [71 v. 78.]

*Repealed April 20, 1877.*

Under this act, the following named gentlemen were appointed by Governor William Allen and confirmed by the Senate :

Ralph Leete .....	Lawrence county.
Alexander Waddle .....	Clarke county.
Warren P. Noble .....	Seneca county.
William Larwill .....	Crawford county.
Joseph Sullivant .....	Franklin county.

In June, 1876, Assistant Professor John H. Wright, for the purpose of pursuing his studies in Europe, resigned the place which for three years he had satisfactorily filled. To the position thus vacated Josiah R. Smith, A.B., a graduate of Amherst College, and at this time an assistant teacher in the Columbus High School, was appointed. In the same year First Lieutenant Luigi Lomia, of the Fifth United States Artillery, was, pursuant to the request of the Board, detailed by the Secretary of War to take charge of the military instruction which the institution is required to give. These gentlemen entered upon the discharge of their duties at the opening of the fall term in the above named year.

The Board of Trustees made military drill obligatory on the part of all the young men of the College except those who should be excused on account of religious scruples or physical disability, and the War Department of the United States furnished arms, ammunition, and accoutrements to supply all demands.

A second reorganization of the Board of Trustees was effected in April, 1877, by the passage of the following act, under an ungrammatical title, viz :

#### AN ACT

To regulate the Ohio Agricultural and Mechanical College in Ohio, and to repeal certain acts therein named.

**SECTION 1.** *Be it enacted by the General Assembly of the State of Ohio,* That immediately after the passage of this act, the governor, with the advice and consent of the senate,

shall appoint a board of trustees of the Ohio Agricultural and Mechanical College, located at Columbus, Ohio. Said board shall consist of one from each congressional district of the state of Ohio. The government of said college shall be vested in said board of trustees. The governor shall have power to make said appointments when the senate is not in session, and in case the senate is not in session at the time of making said appointments, the trustees so appointed shall proceed to act upon the certificate of the governor, and such nomination shall be submitted to the senate at its next session.

SEC. 2. The members of said board of trustees, and their successors, shall hold their office for the term of six years each ; provided, that at the first regular meeting of said board the members thereof shall determine by lot their respective terms of office, so that, as nearly as may be, one-third shall hold their office for two years, one-third for four years, and one-third for six years from the date of the first meeting of the board, or until their successors are appointed and qualified. In case a vacancy occurs, by death, resignation, or otherwise, the appointment shall be for the unexpired term. The trustees shall receive no compensation for their services, but they shall be entitled to their reasonable and necessary expenses while occupied in the discharge of their official duties. No trustee, nor relation of any trustee by blood or marriage, shall be elected or appointed to a professorship, or any other official position in the college, or to any place of trust in connection with any monetary interest of the college, the compensation of which is to be paid out of the state treasury, or the agricultural and mechanical college fund, except upon the approval of the governor.

SEC. 3. The said board of trustees shall annually appoint an executive committee, to consist of not less than three nor more than five of their own number, who, when the said board is not in session, shall have the management and control of the affairs of said college, under the direction of said board, and they shall furnish to the board, at every regular meeting thereof, or oftener if required by said board, a full report of their proceedings in the management and control of said college.

SEC. 4. The board of trustees shall have power, and it is hereby made their duty, to secure and keep in the said college a collection of specimens in mineralogy, geology, zoölogy, botany, and other specimens pertaining to natural history and the sciences ; and it shall be the duty of the chief geologist of the state to collect and deposit in the said college, in such manner as shall be directed by the trustees, a full and complete set of specimens as collected by him and his assistants, together with a brief description of the character of the same, and where obtained ; and the said specimens shall be properly classified and kept for the benefit of said college.

SEC. 5. The first meeting of the members of the board shall be called by the governor, as soon after the appointment of said board as he may deem advisable, to be held at the said college, in Columbus, Ohio. All succeeding meetings shall be called in such manner, and at such times as the board may prescribe. The said board shall meet at least once annually, and at such other times as they may think necessary for the best interests of the said college : provided, however, that said meetings shall not exceed two in any one year. A majority of the board of trustees present at any meeting shall constitute a quorum to do business : provided, it shall require a majority of all the board to elect or remove a president or professor.

SEC. 6. The board of trustees shall cause to be made, on or before the first day of January of each year, a report to the governor of the condition of said college ; the amount of receipts and disbursements, and for what the disbursements were made ; the number of professors, teachers, and other officers, and the position and compensation of each ; the number of students in the several departments and classes, and the course of

instruction pursued in each; also, an estimate of the expenses of the ensuing year; a statement showing the progress of said college, recording any improvements and experiments made, with their costs, and the results, and such other matters as may be supposed useful. There shall be printed, under the provisions of section seven (7) of the act passed March 30, 1875 (O. L., vol. 72, page 179), in pamphlet form, one thousand copies of said report for the General Assembly, one thousand for the president and faculty of said college, and three thousand copies for distribution by the trustees in their several districts, in such manner as they shall deem best for the interests of said college. The president of said college shall transmit, by mail, one copy to the secretary of the interior, and one copy to each of the colleges which are or may be endowed under the provisions of the act of Congress of July 2, 1862.

SEC. 7. All funds derived from the sale of land scrip issued to the state of Ohio by the United States, in pursuance of the aforesaid act of congress, together with the interest accumulated thereon, shall constitute a part of the irreducible debt of the state, the interest upon which, as provided by the act of February 10, 1870 (O. L., vol. 67, p. 15), shall be paid to the college by the auditor of state upon the requisition of the commissioners of the sinking fund, issued on the certificate of the secretary of the board of trustees, that the same has been appropriated by said trustees to the endowment, support and maintenance of the college, as provided in the act of congress aforesaid.

SEC. 8. That an act passed April 16, and took effect May 1, 1874 (O. L., vol. 71, p. 78), entitled "an act to amend the act entitled an act to establish and maintain an Agricultural and Mechanical College in Ohio," and sections ten, twelve, fourteen and sixteen of an act passed and took effect March 22, 1870 (O. L., vol. 67, p. 20), be and they are hereby repealed.

SEC. 9. That the said board of trustees shall fix the compensation of the faculty of said institution, and in fixing the same shall make such part thereof as may be just and reasonable, contingent upon the average attendance of pupils during the current year.

SEC. 10. That this act shall take effect and be in force from and after its passage.

Passed April 20, 1877. [74 v. 100.]

Repealed May 1, 1878.

By this act it will be seen that the Board of Trustees was increased from five to twenty, so as to include one member from each Congressional District of the State, and the following members were appointed by Governor Thomas L. Young:

1st District .....	Alfred Gaither.
2d " .....	C. Kinsinger.
3d " .....	Cyrus Falconer.
4th " .....	R. P. Finley.
5th " .....	J. P. Schneider.
6th " .....	W. H. Scott.
7th " .....	Herman Hoover.
8th " .....	A. C. Deuel.
9th " .....	T. C. Jones.
10th " .....	W. P. Noble.
11th " .....	Ralph Leete.
12th " .....	J. Sullivant.
13th " .....	D. W. Caldwell.

14th District.....	Thomas Mickey.
15th    "       .....	A. W. Glazier.
16th    "       .....	J. C. Jamison.
17th    "       .....	A. B. Cornell.
18th    "       .....	C. W. Horr.
19th    "       .....	E. F. Ensign.
20th    "       .....	W. S. Streator.

Pursuant to a call from the Governor, the new Board met at the College on June 19, 1877, and effected a permanent organization, by the election of the following officers and committees :

*President*—Warren P. Noble.

*Secretary*—Joseph Sullivant.

*Treasurer*—Henry S. Babbitt.

*Executive Committee*—T. C. Jones, A. C. Deuel, Herman Hoover, W. S. Streator, J. Sullivant.

*Committee on Farm Management*—E. F. Ensign, C. Kinsinger, J. C. Jamison.

At the same session of the Legislature there was passed

AN ACT

To establish a school of mines and mine engineering in the Ohio Agricultural and Mechanical College.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the trustees of the Ohio agricultural and mechanical college be and they are required to establish in said college a school of mines and mine engineering, in which shall be provided the means for studying scientifically and experimentally the survey, opening, ventilation, care, and working of mines, and said school shall be provided with complete mining laboratories for the analysis of ores, coals, and other minerals, with all the necessary apparatus for testing the various ores and coals, and also with the models of the most improved machinery for ventilating and operating all the various mines with safety to the lives and health of those engaged.

SEC. 2. Said trustees may require one of the professors now authorized to be employed in said institution, to give instruction in the most improved and successful methods of opening, and operating, and surveying, and inspecting mines, and in the methods of testing and analyzing coals and other minerals, especially those found in the state of Ohio. It shall also be the duty of such professor to register all experiments made in testing the properties of the coals and other minerals, and such results shall be published in the annual reports of said trustees. It shall also be the duty of said professor to preserve in a cabinet, suitably arranged for ready reference and examination, suitably connected with this school of mines, samples of the specimens from the various mines in the state, which may be sent for analysis, with the names of the mines, and their localities in the counties from which they were sent, and the analysis and a statement of the properties attached. It shall also be his duty to furnish analysis of all minerals found in the state and sent to him for that purpose by residents of this state.

SEC. 3. There is hereby appropriated out of the general revenue fund the sum of four thousand five hundred dollars, to be expended in providing apparatus, equipments, cabinets, etc., as mentioned in the first and second sections of this act.

SEC. 4. This act to take effect and be in force from and after its passage.

Passed May 7, 1877. [74 v. 216.]

At a meeting of the Trustees, held on June 20, 1877, the following action was had:

*Resolved*, That the curriculum be changed, by striking therefrom the Department of Political Economy and Civil Polity, and substituting therefor the Department of Mines, Mine Engineering, and Metallurgy.

*Resolved*, That Henry Newton, A M., M.E., be appointed Professor of Mines, Mine Engineering, and Metallurgy, in the Ohio Agricultural and Mechanical College, at the same salary as the other Professors.

Mr. Newton having visited the College, accepted the position, expecting to commence his labors at the opening session in September, 1877.

In the meanwhile, under an appointment of the United States Government, he visited the Black Hills, to complete some geological investigations upon which he had been employed; but, unfortunately, he was almost immediately prostrated by mountain fever, and died after a brief illness.

The professorship was now offered to William E. Guy, E.M., of St. Louis, a graduate of the Mining School of Freiburg, Saxony. He also visited the College, and left with the expectation of accepting the place, but on his return to St. Louis found it impracticable on account of business connections, which could not be at once dissolved.

The position was then tendered to and accepted by John A. Church, E.M., an experienced Metallurgist and Mining Engineer, who immediately proceeded to equip and put in order the department, and entered on his work of instruction in January, 1878.

The College faculty, with the consent of the Trustees, offered to give a course of lectures on agriculture and cognate subjects—to extend throughout the winter term, commencing in January, 1878, provided thirty or more applicants should signify their intention to attend the lectures. Seven persons, however, were all that appeared at the appointed time; and by reason of this meagre response, the lectures were not given.

The Executive Committee abolished the entrance examination in Algebra, before required of all students for admission; but at the November meeting, at the unanimous request of the faculty, this action was reversed by the Board.

In May, 1878, a third reorganization of the Board of Trustees was effected by the legislation that follows. The name of the institution was also changed by this act:

#### AN ACT

To reorganize and change the name of the Ohio Agricultural and Mechanical College, and to repeal certain acts therein named.

**SECTION 1.** *Be it enacted by the General Assembly of the State of Ohio*, That the educational institution heretofore designated as the Ohio agricultural and mechanical college shall be known and designated hereafter as "The Ohio State University."

SEC. 2. The government of said university shall be vested in a board of seven trustees, who shall be appointed by the governor of the state, with the advice and consent of the senate; but no trustee, or his relation by blood or marriage, shall be eligible to any professorship or position in the university, the compensation for which is payable out of the state treasury, or said college fund.

SEC. 3. The members of said board of trustees, and their successors, shall hold their offices for the term of seven years each: provided, that the trustees first appointed under the provisions of this act shall hold their terms for one, two, three, four, five, six, and seven years, respectively, to be fixed by the governor in their commissions. In case a vacancy shall occur from death or other cause, the appointment shall be for the unexpired term. The trustees shall not receive any compensation for their services, but they shall be paid their reasonable and necessary expenses while engaged in the discharge of their official duties.

SEC. 4. The board of trustees shall have power, and it is made their duty, to collect, or cause to be collected, specimens of the various cereals, fruits, and other vegetable products, and to have experiments made in their reproduction upon the lands of the university, and to make report of the same, from year to year, together with such other facts as may tend to advance the interests of agriculture.

SEC. 5. The board of trustees shall have power, and it is hereby made their duty, to secure and keep in the said university a collection of specimens in mineralogy, geology, zoölogy, botany, and other specimens pertaining to natural history and the sciences; and it shall be the duty of the president of the university to collect and deposit in the said university in such manner as shall be directed by the trustees, a full and complete set of specimens as collected by him and his assistants, together with a brief description of the character of the same, and where obtained; and the said specimens shall be properly classified and kept for the benefit of said university.

SEC. 6. The first meeting of the members of the board shall be called by the governor, as soon after the appointment of said board as convenient, to be held at said university, in Columbus, Ohio. All succeeding meetings shall be called in such a manner, and at such times as the board may prescribe. The said board shall meet at least three times annually, and at such other times as they may think necessary for the best interest of the said university. A majority of the board of trustees present at any meeting shall constitute a quorum to do business: provided, a majority of all the board shall be required to elect or remove a president or professor.

SEC. 7. The board of trustees shall cause to be made, on or before the first day of January of each year, a report to the governor of the condition of said university; the amount of receipts and disbursements, and for what the disbursements were made; the number of professors, officers, teachers, and other employés, and the position and compensation of each; the number of students in the several departments and classes, and the course of instruction pursued in each; also, an estimate of the expenses for the year; a statement showing the progress of said university, recording any improvements and experiments made, with their costs, and the results, and such other information may be supposed useful. There shall be printed, under the provisions of section (7) of the act passed March 30, 1875 (O. L., volume 72, page 179), in duplicate, one thousand copies of said report for the general assembly, one thousand copies for the president and faculty of said college, and three thousand copies for distribution to trustees in their several districts, in such manner as they shall deem best for the benefit of said university. The president of said university shall transmit by express copy to the secretary of the interior, and one copy to each of the colleges



which are or may be endowed under the provisions of the act of congress of July 2, 1862.

SEC. 8. All funds derived from the sale of land scrip issued to the state of Ohio by the United States, in pursuance of the aforesaid act of congress, together with the interest accumulated thereon, shall constitute a part of the irreducible debt of the state, the interest upon which, as provided by the act of February 10, 1870 (O. L., volume 67, page 15), shall be paid to the university by the auditor of state, upon the requisition of the commissioners of the sinking fund, issued on the certificate of the secretary of the board of trustees, that the same has been appropriated by said trustees to the endowment, support and maintenance of the university, as provided in the act of congress aforesaid.

SEC. 9. That said board of trustees shall fix the compensation for the faculty, teachers, and all other employes of the university: Provided, that the compensation for the services of the president of said university shall not exceed three thousand dollars, and that of the professors twenty-five hundred dollars per annum.

SEC. 10. It shall be the duty of the board of trustees, in connection with the faculty of the university, to provide for the teaching of such branches of learning as are related to agriculture and the mechanic arts, mines and mine engineering, and military tactics, and such other scientific and classic studies as the resources of the fund will permit; but no student will be required to study military tactics or take part in military drill, or provide any military or particular uniform, except those who elect to study military tactics.

SEC. 11. That the act passed April 20, 1877 (O. L., volume 74, page 100), entitled "an act to regulate the Ohio agricultural and mechanical college in Ohio, and to repeal certain acts therein named," and all parts of acts repealed by said act, are hereby repealed.

SEC. 12. This act shall take effect and be in force from and after its passage.

Passed May 1, 1878. [75 v. 126.]

Under this act Governor R. M. Bishop appointed the following Board of Trustees:

Hon. James B. Jamison .....	Cadiz, Harrison county, for one year.
S. H. Ellis .....	Springboro, Warren county, for two years.
Hon. Stephen Johnston .....	Piqua, Miami county, for three years.
Hon. T. J. Godfrey .....	Celina, Mercer county, for four years.
Alston Ellis .....	Hamilton, Butler county, for five years.
T. Ewing Miller .....	Columbus, Franklin county, for six years.
Hon. J. H. Anderson .....	Columbus, Franklin county, for seven years.

At their meeting in May, 1878, the officers of the Board were chosen as follows:

T. J. Godfrey .....	<i>President.</i>
Joseph Sullivant .....	<i>Secretary.</i>
Dr. Henry S. Babbitt .....	<i>Treasurer.</i>

#### EXECUTIVE COMMITTEE.

J. H. Anderson, *Chairman.*

T. Ewing Miller.

Stephen Johnston.

At a meeting of the Board on June 18, 1878, Prof. T. C. Mendenhall, who had filled the chair of Physics and Mechanics in the institution from its opening, resigned his professorship to accept a similar position in the Imperial University of Tokio, Japan. His resignation was accepted and a resolution expressive of the high estimate of the service rendered by him to the University was entered on the minutes. At the request of the faculty the Board conferred on Prof. Mendenhall the degree of Doctor of Philosophy (*Ph. D.*).

At the same meeting President Orton asked to be relieved of his duties as president of the University, on the ground that all of his time was now demanded by the professorship of Geology, which he also holds. Action on his request was deferred.

At the fifth commencement, viz., on June 19, 1878, the first class was graduated. It consisted of six young men, five of whom received the degree of *B.S.* and one the degree of *A.B.*

At a meeting of the Board held in July, 1878, S. W. Robinson, C.E., Professor of Mechanical Engineering and Instructor in Physics in Illinois Industrial University, was invited to take the chair vacated by Prof. Mendenhall. He accepted and entered on his duties at the opening of the Fall Term, September 12, 1878. He was charged by the trustees with the immediate establishment of a department of Mechanical Engineering in connection with his professorship. He entered at once upon this duty, and a class of ten students has already begun work in the new department.

A course of lectures on Agriculture was again offered by the faculty of the University, with the approval of the Trustees, to the farmers of Ohio, the course to begin on January 9, 1879, and continue four weeks. The giving of the course was made contingent on the names of thirty applicants being received by December 9, 1878. The requisite number having signified their purpose to attend, a programme of the course has been issued.

At a meeting of the Board, held on November 7, 1878, Albert Allen, Esq., was elected Secretary, and entered at once upon his duties.

In enumerating the resources of the University, mention has been made of the grant made to it by the State of Ohio of unsurveyed and unentered lands in the Virginia Military District of the State. This grant was made in the early part of the year 1872. It has not yet become a source of income to the institution, but it is hoped that some addition to the funds will ultimately result from it.

Several efforts have been made to obtain, for the better equipment of the University, the proceeds that should arise from the sale of swamp



and canal lands within the limits of Ohio. Favorable action has twice been taken by the Senate.

With the following recapitulation, this history will be concluded:

The productive funds of the institution, derived from the sale of the land scrip and from interest accruing thereon, now amount to \$500,000, and constitute a part of the irreducible debt of the State, on which interest is computed and paid at 6 per cent., giving an annual income of \$30,000.

The money furnished by Franklin county and citizens of Columbus, amounting to about \$328,000, has been used in the purchase of a farm of 317 acres within the corporate limits of the city of Columbus, and in the erection of the necessary college and farm buildings, and in the equipment of the several departments of instruction. Since the purchase of the farm, the price of land in this portion of the city has been largely increased. When to this is added the value of the lands given to the University by the State in the Virginia Military District, the property belonging to the institution, exclusive of its endowment, will scarcely fall below \$500,000.

During the first year of the College there were in attendance....	90	students.
During the second year.....	118	"
During the third year .....	143	"
During the fourth year .....	254	"
During the fifth year.....	309	"

The numbers given include all the students in the institution between November first and the subsequent November first, in accordance with the State requirement for making the annual report.

# **APPENDIX B.**

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## **BY-LAWS AND RULES AND REGULATIONS**

### **OF THE**

## **BOARD OF TRUSTEES OF THE OHIO STATE UNIVERSITY.**

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### **ORGANIZATION AND MEETINGS.**

**SECTION 1.** The officers of this Board shall consist of a President, Secretary, and Treasurer, who shall be chosen by ballot at the first meeting of the Board, and at each annual November meeting thereafter, and shall hold their offices until their successors are elected and qualified.

**SEC. 2.** There shall be three meetings of the Board each year. One meeting shall be held on the third Thursday of November of each year, at the city of Columbus, at 9 o'clock A.M.; another meeting shall be held at the University on Tuesday of the week of the annual examination and commencement; and the third meeting shall be held at Columbus at such time as may be agreed upon by the Board.

### **OF THE RIGHTS AND DUTIES OF THE PRESIDENT.**

**SEC. 3.** The President shall take his place precisely at the time provided for at the preceding meeting, and shall immediately call the Board to order.

**SEC. 4.** He shall have the right to call upon any member to perform the duties of the Chair, but such substitution shall not extend beyond an adjournment.

**SEC. 5.** He shall preserve order and decorum in the proceedings of the Board, and shall observe and impartially administer that system of rules and regulations known as "parliamentary law," so far as the same may be applicable to the proceedings of this Board.

**SEC. 6.** All committees shall be appointed by the President, unless otherwise ordered by resolution of the Board.

**SEC. 7.** He shall sign the journal of all proceedings of the Board, had at each meeting; and all appointments made by the Board shall be signed by him, attested by the Secretary, who shall affix to every such appointment the corporate seal.

**SEC. 8.** The President is authorized to call special meetings of the Board; and it is hereby made his duty to do so, upon request of a majority of the Executive Committee, or whenever in his judgment the same should be convened, by causing all the members to be notified a reasonable time before any such meeting.

**EXECUTIVE COMMITTEE.**

**SEC. 9.** The Executive Committee shall consist of three members, who shall be chosen by ballot at the November meeting; who, when the Board is not in session, shall have the management and control of the affairs of the University, under direction of the Board, which committee shall furnish to the Board, at every regular meeting thereof, or oftener if required by the Board, a full report of their proceedings in the management and control of the University.

**SEC. 10.** The Executive Committee shall not create any liability not duly authorized by the Board, nor contract any debts beyond the appropriation made by the Board; but the order of the chairman of said committee, or the resident trustee designated by them, shall be sufficient warrant for the Secretary to issue his draft on the Treasurer for the payment of such orders as may be approved by said committee.

**FARM COMMITTEE.**

**SEC. 11.** There shall be elected, by ballot, at the November meeting of the Board, a committee of three members, to have the supervision and direction of the management of the University farm, and of experiments made thereon, subject to the direction of the Board.

**SEC. 12.** The Farm Committee are prohibited and restrained, in like manner as the Executive Committee, in regard to liabilities and debts, but are authorized to expend any and all appropriations made by the Board for the use of the farm, and to conduct experiments on the same; and an accurate account of such experiments, their cost and results, shall be prepared and presented to the Board in time for publication in the annual report.

**SEC. 13.** The Secretary shall recognize the orders or requisitions made upon him by the Farm Committee, and shall issue his draft, in payment of the same, on the proper appropriation.

**COMMITTEE ON FINANCE.**

**SEC. 14.** There shall be elected, by ballot, at the November meeting of the Board, a Committee on Finance, to consist of three members, who shall have charge of, and report upon, such matters as the Board may from time to time refer to them; and who shall recommend to the Board for adoption such measures as, in their judgment, will best promote the pecuniary interests of the University.

**SEC. 15.** It shall be the duty of the Finance Committee, at the November meeting, to examine all vouchers held by the Treasurer, and to make a comparison of his books with those of the Secretary, and report the results of such examination and comparison to the Board at the same meeting.

**DUTIES OF THE SECRETARY.**

**SEC. 16.** The Secretary shall be the custodian of the books, papers, and seal, and he shall, in all proper cases, authenticate the acts of the Board by affixing said seal; he shall also conduct the Board's official correspondence.

**SEC. 17.** He shall attend all meetings of the Board, keep a correct journal, entering all motions, resolutions, orders, and other proceedings, and perform such other duties as the Board may, from time to time, prescribe.

**SEC. 18.** It shall be the duty of the Secretary to prepare the annual report of this Board, and submit it for adoption or revision at the November meeting.

## DUTIES OF THE TREASURER.

SEC. 19. The Treasurer shall keep an accurate account of all moneys received and disbursed by him, and at the end of every quarter he shall furnish the Executive Committee, if directed, and at each November meeting to the President of the Board, a detailed statement of all moneys received and expended by him; and he shall give bond, payable to the State of Ohio for the use of the Ohio State University, in the sum of fifty thousand dollars (\$50,000), for the safe keeping of said funds and the payment of the same in obedience to the rules and regulations of the Board, and for the faithful performance of his duties as said Treasurer.

## MODE OF ACCOUNTING.

SEC. 20. Before any money shall be paid into the Treasury, or any requisition be made upon the Auditor of State in favor of the Treasurer (as provided in act of the Legislature passed March 22, 1870), the Secretary shall enter a correct account of the same in a book to be kept for the purpose, and certify all such money to the Treasurer; and the Treasurer shall not receive any money except upon such certificate or requisition; and all such certificates and requisitions shall be numbered in the order in which they shall be issued, in duplicate, the receipt of one of which shall be acknowledged upon its face by the Treasurer and preserved by the Secretary in book form, and the other given to the Treasurer.

SEC. 21. No money shall be paid by the Treasurer except in pursuance of appropriations made by the Board of Trustees, and as otherwise provided in section 23 of these By-Laws.

SEC. 22. Every draft upon the Treasurer shall be drawn by the Secretary, numbered in consecutive order, and shall be made payable to the order of the person in whose favor the same may be made, and specify upon its face for what purpose it is drawn.

SEC. 23. No draft shall be drawn by the Secretary, except for the payment of fixed salaries, expenses of the members of the Board, stationery and postage, only by resolution of the Board or upon the written order of the Executive Committee, the chairman thereof, or the person duly authorized by the Board.

SEC. 24. Every person receiving such draft upon the Treasury shall sign a receipt for the same, which shall agree in date, number, and amount with such draft; and all such receipts shall be preserved by the Secretary in book form. The Treasurer, upon receiving any such draft, shall, upon payment, cancel the same, as paid bank checks are canceled, and enter in his books the number, date, and amount of every such draft and the name of the person to whom paid; and the said canceled drafts shall be carefully preserved by him as vouchers for which he shall be credited in his settlements.

## ORDER OF BUSINESS.

SEC. 25. As soon as the Board is called to order, a quorum being present, the journal of the preceding day, or of the last meeting, shall be read by the Secretary, and, if necessary, corrected by the Board.

SEC. 26. When the journal has been read and approved, as provided for in the foregoing section, the President shall state any matters of business to be acted upon, which shall be disposed of in such order as he may have it arranged, unless otherwise determined by a majority of the members present. Every motion or resolution that may be deemed necessary to be entered upon the journal shall be reduced to writing by the member offering the same, and the vote upon such motion or resolution shall be taken by yeas and nays, when such a vote is demanded by any member, and recorded with the motion or resolution.

## THE FACULTY.

**SEC. 27.** The immediate government of the University, in all that relates to the order and discipline therein, the times of recitation, the general care of the buildings, etc., etc., is vested in the President and Professors constituting the Faculty, who are authorized and required to establish such rules and regulations as may conduce to the good order and proper government of the University, subject to the approval of the Board of Trustees.

**SEC. 28.** They are authorized to affix and enforce such penalties for the violation of said rules and regulations, as the nature and manner of the offense may demand, a majority of the Faculty concurring therein, but their action may be reviewed and annulled by the Board after an impartial hearing of the facts of the case.

**SEC. 29.** The Faculty shall hold meetings as often as may be deemed necessary to consult and advise about the mutual management of the University, and a full and correct record of the proceedings of such meetings shall be kept, which shall at all times be open to the inspection of any member of the Board.

**SEC. 30.** They are further empowered to make such rules and regulations, and enforce their strict observance, relating to the study of Military Tactics, as they deem proper: provided, that such rules and regulations do not conflict with an act of the legislature, relating to the same, passed May 1, 1878.

**SEC. 31.** The President of the University is charged with the general oversight of all work done in the various departments already established, and hereafter to be established, and shall preside at all meetings of the Faculty.

**SEC. 32.** All members of the Faculty are required to meet their classes promptly, and a failure so to do, without a reasonable excuse rendered in writing to the President of the University will subject the delinquent to a reduction of salary proportionate to the time lost or dismissal, as may be determined by the Board.

## STUDENTS.

**SEC. 33.** Students of the University are required at all times to yield a prompt obedience to all rules adopted for their guidance by the Faculty.

**SEC. 34.** All term-bills or fees required from students must be paid, or satisfactorily arranged for, before they are admitted to the privileges of the University.

## DEGREES.

**SEC. 35.** Degrees *in cursu* shall be conferred by the Board only upon recommendation of the Faculty; but honorary degrees may be conferred, with or without the recommendation of the Faculty, whenever a majority of all the members of the Board of Trustees deem such action just and proper.

**SEC. 36.** All diplomas issued to those receiving degrees from the University shall be signed by the President and Secretary of the Board of Trustees and by the members of the Faculty of the University.

## MISCELLANEOUS.

**SEC. 37.** The following-named officers of the Board shall each be entitled to receive an annual compensation for his services, payable monthly, as follows: The Secretary shall receive an annual salary of five hundred dollars (\$500), and the Treasurer shall receive an annual salary of four hundred dollars (\$400.)

**SEC. 38.** The Trustees shall each, at every meeting of the Board, present to the Sec-

retary a statement in writing of the sum expended in attending such meeting, who shall receive the same, and thereupon draw upon the Treasurer for the amount, which shall be paid by the Treasurer upon presentation of order or draft.

SEC. 39. All recommendations, communications, and reports made to the Board by any one must be presented in writing, and must be addressed to the President of the Board of Trustees.

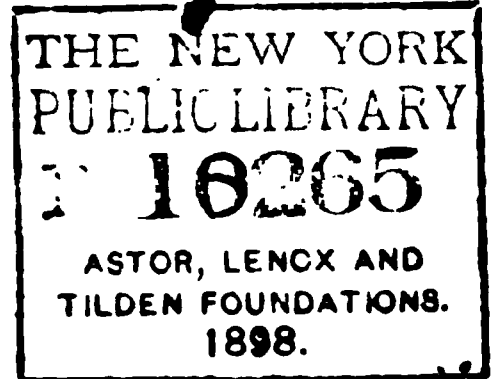
SEC. 40. *These By-laws, or any one of them, may be suspended, amended, or annulled at any regular or special meeting by a majority vote of the members in attendance.*

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NINTH ANNUAL REPORT

OF THE



BOARD OF TRUSTEES

OF THE

OHIO STATE UNIVERSITY,

TO THE

GOVERNOR OF THE STATE OF OHIO,

FOR THE YEAR 1879.

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COLUMBUS:  
NEVINS & MYERS, STATE PRINTERS.  
1879.



THE NEW YORK  
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1898.



OHIO STATE UNIVERSITY.

BOARD OF TRUSTEES.

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HON. J. H. ANDERSON.....	Columbus, Ohio.
ALSTON ELLIS .....	Columbus, Ohio.
HON. THOMAS J. GODFREY.....	Celina, Ohio.
S. H. ELLIS.....	Springboro, Ohio.
HON. STEPHEN JOHNSTON.....	Piqua, Ohio.
HON. JAMES B. JAMISON.....	Cadiz, Ohio.
T. EWING MILLER .....	Columbus, Ohio.

OFFICERS OF THE BOARD: .

STEPHEN JOHNSTON .....	<i>President.</i>
ALBERT ALLEN.....	<i>Secretary.</i>
HENRY S. BABBITT.....	<i>Treasurer.</i>

EXECUTIVE COMMITTEE:

J. H. ANDERSON, T. EWING MILLER, ALSTON ELLIS.

FARM COMMITTEE:

JAMES B. JAMISON, S. H. ELLIS. T. J. GODFREY.

FINANCE COMMITTEE:

ALSTON ELLIS, T. EWING MILLER, T. J. GODFREY,

# FACULTY.

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**EDWARD ORTON, PH.D.,**  
President, and Professor of Geology.

**SIDNEY A. NORTON. PH.D., M.D.,**  
Professor of General and Applied Chemistry.

**JOSEPH MILLIKIN, A.M.,**  
Professor of English Language and Literature, and of the French and German Languages.

**NORTON S. TOWNSHEND, M.D.,**  
Professor of Agriculture.

**R. W. MCFARLAND, A.M.,**  
Professor of Mathematics and Civil Engineering.

**ALBERT H. TUTTLE, M.Sc.,**  
Professor of Zoology and Comparative Anatomy.

**LUIGI LOMIA, M.Sc.,**  
First Lieut. Fifth Artillery, U. S. A.; Professor of Military Science and Tactics, and Adjunct Professor of Mathematics.

**S. W. ROBINSON, C.E.,**  
Professor of Physics and Mechanics.

**JOSIAH R. SMITH, A.B.,**  
Assistant Professor of the Latin and Greek Languages.

**NAT. W. LORD, M.E.,**  
Assistant Professor of Mining and Metallurgy.

**JOHN T. SHORT, A.M.,**  
Assistant Professor of History and Philosophy.

**THOMAS MATHEW,**  
Instructor in Free-hand and Mechanical Drawing.

**ALICE WILLIAMS,**  
Assistant in Department of Modern Languages.

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**JOSIAH R. SMITH, A.B.,**  
Librarian.

**Miss S. GLOVER,**  
Assistant Librarian.

COLUMBUS, *November 16, 1879.*

*To His Excellency,*

GOVERNOR RICHARD M. BISHOP :

SIR: I have the honor to transmit herewith the Ninth Annual Report of the Board of Trustees of the Ohio State University, with accompanying documents, giving in detail the condition of said University.

Very respectfully, your ob't serv't,

ALBERT ALLEN,

*Secretary of the Board.*



## REPORT OF THE BOARD OF TRUSTEES.

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Concern for education began at an early date in Ohio. Before her birth as a State into the Union, it was announced in her territorial articles "that *religion, morality, and knowledge* being necessary to good government and the happiness of mankind, *schools, and the means of education* shall forever be *encouraged*."

The same declaration, only made more emphatic by affirming these things to be "*essentially necessary*," was ingrafted into the Constitution of 1802; and adding that they were to be "*forever encouraged by legislative provision not inconsistent with the rights of conscience*."

To make the operation of these bold and earnest declarations as broad and catholic as possible, so that the benefits contemplated might result to *all*, it was enacted that "no law shall be passed to prevent the poor in the several counties and townships within this State from an equal participation in the schools, academies, colleges, and universities, which are endowed in whole or in part from the revenue arising from the donations made by the United States for the support of schools and colleges." These were not empty expressions of sentimentalism or policy upon the part of the infant State, but made in good faith, and assured in their practical results by granting, for these purposes, one-sixteenth of the entire land area of the State.

The present gratifying condition of our educational affairs is the legitimate outgrowth and development of these early and liberal beginnings. Gradually, as a higher and more advanced form of civilization in letters, science, and art has demanded the investigation of new and untried fields of learning, the State has been among the first to inquire into and utilize such acquisitions. Although possessed of common schools for the elementary cultivation of the masses, and numerous academies and colleges, schools of law and medicine, for the qualification of the more ambitious in the learned professions, the expansion of our agriculture and manufactures could only be met through that wise and generous boon of the Congress of 1862, by which the establishment of "*at least one college*" in the State, "to promote the liberal and practical education of the *industrial classes* in the pursuits and professions of life" was secured.

Projected on this basis, the first session of this State Institution was begun in September, 1873. Six years have passed, and while perhaps the expectations of the more sanguine have not been fully realized, much has been done to stimulate State pride and inspire confidence in the scheme. It should not be forgotten, that a work of such magnitude and importance cannot be accomplished in a day, and that the benefits to result from it are not thus early to be measured by the number of students that have been drawn to the Institution. Ultimately, such a consideration should enter into any estimate of its merit and worth; but it must be remembered that during the period just mentioned our whole country has passed through severe financial distress, and that if a body of students less numerous than was expected have been in annual attendance, it, like other and all institutions of learning, has been deeply embarrassed from this cause. How to obviate in measure the immediate effect of this depressing influence has been the study of the Board of Trustees. Some arrangement to reduce the expenses of the student, so as to conform to the exacting nature of the times, was to be made, and to this end the large building known as the dormitory, and heretofore kept as a boarding-house at fair remunerative rates, has been converted into a *club house*, where students may be allowed to regulate the cost of living to any minimum amount consistent with their wishes or necessities. Already thirty-two students have availed themselves of this arrangement. The government of this "club" has been placed under the wise oversight of the President of the Faculty, whose constant supervision will be exercised in the interest of order and decorum. The sectional prejudice engendered in locating the University has not died entirely out, and the large number of young men absorbed by denominational colleges throughout the State is doubtless one of the causes which has affected the patronage of the University.

Again, the *general* scope of training and education, as proposed by the University, have, through the *limited* signification of its former title (*Agricultural and Mechanical College*), been misunderstood. Many have regarded its instruction as restricted to these two departments, and more are doubtless destitute of any knowledge whatever in relation to it. While the Board has employed the ordinary means of acquainting the public with its character, through the medium of newspapers, circulars, and the distribution of annual reports, it has felt that other and more effective methods should be adopted. To this end a plan has been devised, and will be inaugurated before the close of the session, by which it is believed that proper publicity will be given, and an increased attendance of students secured. Whenever the attendance is commen-

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surate with the capacity of the University, reliance thenceforth may be placed in the retiring graduates properly to represent the University in every section where they may spend their post student lives.

To reach a satisfactory conclusion on this matter, and to ascertain if any deficiency existed in the source of *instruction*, or management of the *internal* affairs of the University, as well, also, as to be certainly advised of the *necessity* of certain appropriations asked of the General Assembly, and their judicious expenditure, if granted, a visit was made to the Industrial University of Illinois, at Champaign, in the month of February last, this being one of the best organized and equipped colleges founded on the land grant, and having a large attendance of students, was selected for special inspection. The Board was favored on this visit with the presence and suggestions of a portion of the Finance Committee of both branches of the General Assembly, the President of the Faculty, and others.

Through the courtesy of President Gregory and the professors of the University, a full insight into its condition and management was had, and much valuable information gained. Four hundred students were in attendance. The original property foundation of the two institutions was very nearly equal, but the State of Illinois has appropriated in all, about \$350,000 for the outfit of the college.

Impressed with the many attainable things which would lend attractiveness and value to our home institution, the Board, on their return, sought and received the hearty coöperation of the visiting members of the Assembly in trying to secure appropriations to cover the necessities of the Ohio State University.

While the Legislature did not see proper to appropriate for all the purposes asked, nor in some cases the amount deemed necessary by the Board, the following grants were made :

For mechanical laboratory and equipment .....	\$9,600 00
For stock and farm improvement.....	3,000 00
For river improvement .....	1,500 00
For solar compass .....	500 00
For analyses required by State law .....	1,200 00

After careful consideration, a plan for the construction of

#### THE MECHANICAL LABORATORY

Was adopted, and the same approved by the Governor, Secretary, and Auditor of State. The legal requirement of advertising for proposals to build was observed, and the contract awarded to Messrs. Clark and Fahey,



the lowest bidders, at the sum of \$4,550. The building is composed of stone foundation, brick walls throughout, and covered with slate; the north and west wings are respectively 32x77 and 32x61 feet, and one story in height, while the connecting corner, which is 34x38 feet, is two stories, and is ornamented by three towers. The building was begun July 21, and completed early in November, and proves, in all respects, well adapted to its object. The general purpose of this building and equipment is not simply to provide instruction in mechanic arts, but to teach the principles necessary to the intelligent designing, superintending, and managing of machinery.

With a view to the best and most economical

EQUIPMENT,

Prof. Robinson was delegated by the Board to visit the best schools of mechanics and machine manufacturing establishments in the east. No purchase of any kind was made until he had carefully inspected the University of Pennsylvania, at Philadelphia, the Stevens Institute, at Hoboken, the Sheffield Scientific School, of Yale College, the Worcester Free Institute, at Worcester, and the Institute of Technology, at Boston.

Prof. Robinson, in concluding his elaborate report relative to the outfit of these schools and their management, says: "We have a valuable lesson from others, enabling us, with the light of their experience, more intelligently to exercise the choice of facilities."

The purchases made for this department comprise the following articles, at the prices named:

Engine, shafting, and pulley .....	\$490 00
Three engine lathes.....	1,050 00
Planer and shaper .....	650 00
Four hand lathes .....	360 00
Milling machine and grinder.....	666 00
Drilling machine .....	150 00
Heating apparatus.....	318 00
Cupola and furnace .....	121 00
Drills, reamers, taps, and dies .....	78 00
Extras on building .....	23 65
Tools for wood working.....	75 00
Tool cases and tools.....	173 00
Anvil and forging tools.....	75 00
Vises.....	88 00
Files .....	65 00
Steam engine indicator .....	72 00
Freights to date .....	54 56

With a small unexpended balance necessary to the purchase of material, and the payment of freight and architect's fees, this special department, so prominent in the organic act, may now be considered as measurably provided for. The Board recognizes with pleasure the gift of a piece of machinery, presented by B. F. Sturdevant, of Boston, to this department. The Board invites the Legislature to a careful inspection of these expenditures.

The status of the other departments remains largely unchanged. It was found necessary to add two laboratory desks in the chemical room, and to make provision for furnishing materials for experiment to the students at as low rates as possible.

A valuable accession has been made to the mathematical equipment through the purchase of a solar compass, with attachments and variations, for which an appropriation of \$500 was made last winter.

A need of greater facilities for instruction is still felt in the schools of Agriculture, Zoölogy, and Drawing, and it is to be hoped the Legislature will extend its fostering care over these by ample provisions during the coming session.

A new department of *History and Philosophy* was created by the Board in June last, and placed under the charge of Prof. John T. Short, of Columbus, as assistant professor. Heretofore two elementary classes in History have been taught in the winter and spring terms. These will be continued, and made preliminary to the advanced course in History and Philosophy necessary to be studied by candidates for the degree of Arts. The class in attendance is an indicative of the want which this department is intended to supply.

On the application of the Board to the War Department, the detail of Lieutenant Lomia as Professor of Military Tactics and Science was extended to June, 1881. In addition to this duty the Board appointed professor Lomia as Adjunct Professor in Mathematics and Teacher of Elocution.

In the *Mining and Metallurgical Department*, it was not deemed expedient to continue the labors of both a regular and an assistant professor, and accordingly the department was placed in charge of Prof. Nat. W. Lord, as assistant professor at a salary of \$1,200 per annum.

Excepting in instances just referred to, the professors in all other departments were continued for the ensuing year. A full detail of their respective work and class attendance can be more perfectly learned by reference to the separate reports herewith submitted.

Dr. Orton tendered his resignation as President at the close of last session. After due deliberation, the resignation was declined, and by the

unanimous wish of the Board his status to the University remains unchanged.

The College curriculum remains the same in its essential features, but a different distribution of the subjects has been made during the past year, by which it is better adjusted to the High Schools of the State.

The requirements for entrance have been very well adapted to the work of the common schools heretofore, and these requirements remain unchanged, but by the action now referred to, a suitable connection with high-school instruction has been provided.

Nearly three hundred students were in attendance during the year covered by this report, representing fifty-seven counties of Ohio, five States of the Union, and two foreign countries.

In general, the Board has great reasons to commend and approve the entire educational and disciplinary management of the University.

At the last commencement the following degrees were conferred, on recommendation of the Faculty:

The degree of Bachelor of Science on J. Scott Humphrey, Amasa B. McMackin, Mary F. Morrison, Henry Snyder, Jr., and Robert S. Towne.

The degree of B. A. on Warren F. Noble.

The degree (in course) of Ph. D. on Prof H. A. Weber, of Illinois.

The degree (honorary) of Ph. D. on Prof. John B. Peaslee, of Ohio.

The honorary degree of Doctor of Laws on Hon. Allen G. Thurman and Hon. Morrison R. Waite.

An amateur band of musicians, composed of the students, was formed last session, and encouragement, in the form of a few dollars, to buy suitable instruments, was appropriated. Their attainments have been very creditable, and will doubtless reach a high degree of proficiency.

#### FARM.

During the season that is now past, 228 acres of the farm have been under cultivation. The productions have been above an average. The methods employed in its management, and the results gained, can relatively be learned by a reference to the full report of the Farm Superintendent, herewith submitted. Heretofore the matter of fruit culture had been entirely neglected. During the spring 210 apple trees, 100 quince, 100 cherry, 30 plum trees, and 150 grape-vines, all of choice varieties, were planted, and in the main are growing well. Ornamental evergreens, intended to furnish protection to the orchard against the wintry storms, have been planted on the north and west sides of the orchard.

Experiments with reference to the profitableness of growing certain varieties of market vegetables and roots have been made, and the production of these will be increased. An addition of 12 14-100 acres of land, at a cost of \$607 00, lying near the old river bed, and contemplated in the appropriation made by the General Assembly last winter of \$1,500 for "river improvement," has been made to the farm, which now contains about 332 acres in all. This purchase was made necessary by the changed channel of the river, and the consequent separation and overflow of a part of the contiguous original lands. A well constructed and efficient dam was built across the old bed of the river at the head of this purchase, and a channel, adequate to carry the entire volume of water, was cut between the nearest points in the curve of the river, thereby uniting both the new purchase and the overflowed lands with the main body of the farm. To give undoubted security and permanency to this work, a larger expenditure of money than was at first estimated was required. The work could not stand incomplete; and to meet this excess, of some \$934.80, the Board was compelled to draw from the appropriation made for the farm, and will appeal to the General Assembly this winter to reimburse it to that extent. The acquisition is a valuable one, and adds to the realty of the University.

The demands in other directions have been so imperative as to render it improper to expend any considerable sum in

#### LANDSCAPE IMPROVEMENTS.

While much should be done to render the surroundings of the University, in consideration of its national relation, more attractive, the Board could only lay the foundation for future improvements, in having some acceptable plat of the grounds made, to which the laying out of roads, the planting of trees, and other ornamental work should conform. This has been done by Prof. McFarland, and it is to be hoped the general beautifying of the grounds will not long be delayed. The sidewalk along the whole line of the farm bordering on High street has been graded, and desirable forest trees will be planted at proper early in the spring.

#### STOCK.

There is a prevailing idea in every State that the institutions founded upon the Congressional grant should, in virtue of their relations to the mechanic arts, agriculture, and other kindred pursuits, not only take the *initiative* in experimental work, but also be enabled to exhibit, in *actual production and possession*, evidences of a higher skill and superior

status than have been attained by individuals engaged in similar pursuits.

The same general idea prevails with reference to the breeding and owning of domestic stock of all kinds. It is not proper here to discuss the grounds of this opinion, or the extent of its correctness. But it is certainly the duty of the Board to avail themselves of all established progress and improvement in any of these matters. Acting on this conviction, and the peculiar fitness of the *Jersey cattle* to certain desirable ends connected with the University (such as dairy purposes, economy in keeping, etc.), the Board purchased a small herd of one bull and six cows and one calf, of solid uniform color, the cows possessing extra milking qualities. These animals being the immediate descendants of imported animals, and recorded in the American Jersey Club Cattle Record, were individually selected for form, color, and other desirable characteristics, for the nucleus of a herd that would give character and credit to the University farm. While the manner and time of purchase secured economy or cheapness to the State, the future profitableness of the transaction is unquestionable. The aggregate amount paid from the appropriation for this purpose, in part, was, for the eight head, \$958.50. The Board expects, at as early a date as is practicable, to lay the foundation of a herd of Durham cattle, and other choice breeds of stock.

#### VIRGINIA MILITARY LANDS.

There has been no great addition during the year to the discovery of Virginia Military Lands. Of those in possession of the University, the Board sold, November 29, 1878, to Mr. Erasmus Tucker, thirty-nine parcels of land in Scioto county, aggregating 11,903 13-100 acres, at the appraised value of \$6,500, on the usual terms of one-fourth cash and balance in one, two, and three years, with six per cent. interest from date. This sale of all the lands owned by the University in Scioto county, in body, to one purchaser, was made to avoid the heavy *expense* and possibilities incident to separate sales of individual parcels to different parties, and under the belief that the principal and interest derived from the purchase money would exceed the final receipts from separate sales. The terms of this and all other sales made by the Board have been in conformity to section five of an act of the General Assembly passed April 3, 1873, as follows:

SEC. 5. And the said trustees are hereby authorized and required to sell all of said lands at public or private sale, at a price not less than the appraised value thereof, on such terms for cash and credit as may be agreed upon between the purchaser and said trustees or any authorized agent of theirs: provided, that the first payment shall, in every case, be not less than one-third of the appraised value of such tract; all deferred

payments shall bear six per cent. interest, to be paid annually, and said trustees may, in their discretion, extend subsequent annual payments through a period not exceeding five years.

The cash proceeds from the sale of other separate tracts, on the same terms, have amounted to \$2,467.40. The payments made during the past fiscal year, on notes due and interest, amount to \$2,812.60.

The discovery, survey, appraisement, recovery, and sale of these lands have involved much care, labor, and expense, which, together with many law-suits on adverse claims of individuals, have left but little clear profit from their possession. Still it is to be hoped that with the revival of general business, and a more remunerative price for agricultural products, a more profitable disposition can be made of what remains.

After a careful consideration of the immediate wants of the University, which can not be met by the resources of the fund, the Board would ask that the following appropriations be made for the objects named, viz.:

Library .....	\$7,500 00
Department of Zoölogy and Physiology .....	2,000 00
Models and specimens in veterinary science.....	1,000 00
Green house for Botanical Department .....	5,000 00
Enlargement of Chemical Laboratory .....	1,000 00
Supplies for Mining Department .....	500 00
Wall and table cases in Geological Museum .....	1,500 00
Telescope .....	1,000 00
Equipment of Department for Drawing and Engraving.....	2,000 00
Farm improvement and stock.....	3,000 00
Landscape improvements in campus .....	2,500 00
Board expenses since 1871 .....	5,150 99

This *last item* is the aggregate of "*necessary*" and "*reasonable*" expenses incurred by the Board of Trustees from the beginning of the College to the present time, and by the Legislature ordered to be paid, without making any provision therefor. As these amounts have been advanced from the interest fund, it would seem but just and right that they should be returned by the State.

For the performance of the duties mentioned in sections 4, 5, and 7, of act passed May 1, 1878, the Board beg leave to refer to the appended reports of the Faculty, Farm Superintendent, Treasurer, and reports of the Board proceedings.

In conclusion, the Board beg leave to say that they have endeavored, in the administration of the affairs of the University, to make all their acts conform to three leading principles—

1. The subordinating of everything to the line of the organic act creating the Institution.

2. The developing and expanding of every available resource in furnishing to the greatest number the highest form of practical education.

3. The management of all its interests with honesty, fidelity, and economy.

ALBERT ALLEN,  
*Secretary of the Board.*



## REPORT OF THE PRESIDENT.

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HON. T. J. GODFREY, *President of Board of Trustees of Ohio State University* :

DEAR SIR: The report which I herewith present covers the calendar year that ends November 15, 1879.

This year has been the most successful in the history of the institution. Two hundred and ninety-four students have been in attendance in its several departments. The classes in the more advanced subjects of study, and in laboratory work, have been stronger than ever before, which is another way of saying that the institution is coming to do a larger share of true college work. Besides these facts, I am able to record some notable additions to the educational advantages of the University, which will be duly mentioned hereafter.

The standard of admission to the University remains unchanged. I venture to repeat my often expressed opinion that the requirements for entrance are, on the whole, the fairest and best that can be established, and I repeat the opinion, with the frequent discussions of the question, in and out of the institution, fully in mind. I believe that by a fair interpretation of the act of Congress and the State legislation, on which the institution is founded, it is made clear that the College was designed to supplement the common schools of the State, and that, therefore, it should begin its work of instruction where the common schools stop. As to what the work of common schools is, there can be no question. It is to give a competent knowledge of the common branches. As a matter of fact, they very seldom reach this result without doing something more. They bring in Algebra, United States History, and Natural Philosophy, and very few students acquire in them a satisfactory knowledge of Arithmetic, Grammar, and Geography, without taking up one or more of the branches named above. In our entrance examinations we lay stress on these common branches; but we also require the elements of Algebra. This demand is not found to stand in the way of properly qualified students from the country schools, and it serves a good purpose in keeping out of the college immature youths from the grammar schools of cities and towns, who are unable to do what is, in any proper sense, college work, and who have open to them in their high school courses exactly the opportunities that they need. I repeat, then, that we meet fully and fairly the common schools of the State. All students that have learned



what these schools ought to teach can enter our doors "without let or hindrance." Examinations in the common branches could well enough be made much more severe than we have yet made them. With increasing numbers in attendance it will be found practicable to obtain somewhat higher qualifications than we have thus far been obliged to accept, but no lower standard than that at present established can be admitted without diverting the college from its proper work.

We have thus far failed to meet the high schools of the State as fairly as we have met the common schools, and the failure has been a serious disadvantage to us. A new adjustment of our preparatory work has just been effected, which promises to make as easy a transition from the high schools to the college as has always been maintained between the college and the country schools. Students coming from the latter will enter a two years' preparatory course, while a high school graduate can enter directly upon college work. There has been from the first a two years' preparatory course, but it has embraced hitherto studies not found in the ordinary high school course, or studies pursued in more extended courses than the high schools give, so that the graduate of the latter, on presenting himself for admission to the University, found in such studies as I have named, a barrier to his entrance upon full college work. By the reconstruction of our preparatory course, it is now made equivalent to the ordinary high school course, and henceforth the properly qualified high school graduate can pass examination in all our preparatory work and obtain standing in the freshmen class of the University.

I count this change a wise one, and likely to be very serviceable to the institution.

In connection with the changes in the preparatory department just named, the courses of study for the several degrees of the University have been remodeled to some extent. I think it safe to say that they have been materially improved. The new system utilizes more fully than the old one the various departments of the University and insures a more varied and symmetrical education.

A positive addition of great value has been made to our educational work by the establishment of a department of Philosophy and History. The recognition of these subjects in our curriculum comes none too soon. Their omission subjected us to grave criticism on the part of educators, and made our work seem one-sided and incomplete. I count the establishment of this chair a notable advance for the institution.

Prof. John T. Short was called to the new chair, and entered upon his duties in September last. Classes have already been organized in both subjects—Psychology and History, and are now in successful progress.

*By the change of the status of the Mining Department from a full*

professorship to an assistant professorship, the University loses the valuable service of Prof. John A. Church. The number of students in this Department must be small for several years, as students are required to gain preparation for it in the other departments of the institution, but I am sure that its establishment was timely and wise, and that it will ultimately become one of the most attractive and largely chosen of our special courses.

The assistant professorship was filled by the appointment of N. W. Lord, M. E., who had previously been employed in the University in making the chemical analyses required by the State. No break in the instruction, or in the practical work demanded of the department has occurred, and a fair proportion of our students are shaping their studies for the degree of Mining Engineer.

I congratulate the Board on the success of its appeal to the last Legislature for appropriations in behalf of some of the departments of the University. The main item in these appropriations was one of \$9,600 for the building and equipment of a Mechanical Laboratory. The building is now substantially completed, and money has never been more carefully and economically expended on the College grounds than in its erection. It presents a good exterior, and makes a fine addition to the structures of the University.

Its equipment consists of as good machinery, for the purposes required, as could be bought in the markets of the country. The laboratory will be in working order by the beginning of the winter term. I am confident that it will prove very serviceable to the interests of the University and of the State.

The outfit of the Department of Civil Engineering has been improved by the purchase of a solar compass. The means for this purchase, also, were furnished by the bounty of the State. The department now possesses a full set of approved instruments for the practical training of the engineer and surveyor.

In the Chemical Department additional desks have been placed. The whole of the space that can be used for desks is now occupied, and every place at the desks is in demand. The excellent opportunities offered in this department are appreciated by the students, and there is every reason for believing that at the opening of the ensuing year there will be a larger number applying for places in the laboratory than can be accommodated. There is little more available space to be had for this purpose without displacing other departments. The truth is, the Chemical Department needs a building to itself, and it is to be hoped that its necessities can soon be met.

Among the items indicative of progress during the last year, I must not omit to mention the success of the special course of lectures on Agriculture and the sciences pertaining thereto. At the date of my last report, it was still uncertain whether the course would be sustained by the farmers of the State in large enough numbers to justify the faculty in withdrawing the necessary amount of time and force from ordinary college work to carry on the lectures. The course was, however, opened with a goodly number of intelligent and earnest farmers present, and the interest and attendance increased to the end. There were more than one hundred names entered on the class register. It is to the State Grange that credit must be given for the success of the scheme, so far as gathering a lecture class on college grounds was concerned. The offer of such a course had been repeatedly made to the farmers of the State, but, while there were many to express their interest and approval, there was a lack of definite action, and so nothing but failures had heretofore resulted. To avert just such a failure in this instance, the State Grange interposed, and by means of its effective organization secured the requisite number of names to guarantee the course.

The success of the scheme was marked and gratifying. The college can find here a direct and immediate connection with one of the great interests to which it owes its origin that it will gladly use. I am happy to record that a second course of lectures has been agreed upon, to open on January 13, 1880, and to continue for three weeks. We are encouraged to expect a large attendance.

It is not to be denied that there has been distrust of the college on the part of many representatives of the agriculture of the State. Some seem to consider it false to the interests of agriculture because it is not wholly devoted to them. Others do not conceal their disappointment at its falling below some standard they have set for it in practical service. So far as these feelings of distrust and disappointment spring from the recognition of the fact that the land-grant colleges owe to agriculture peculiar service and obligations that can never be cancelled, they are a promise of good to the youthful institution—for a little jealousy is better than complete indifference. But no better service can be rendered to the agriculture of Ohio than to establish and maintain cordial relations between it and the school of science, which has for one of its chief objects to serve this great and fundamental interest.

I learn from the Farm Superintendent that during the past year students have earned by their labor on the college farm \$1,250 00. This is a larger amount than has been earned in any previous year. I use the word *earned* designedly. The work has been carried on upon business,

Principles, but whatever could be profitably turned over to students, they have had the opportunity of doing. The money thus earned has enabled quite a number of our most meritorious young men to continue their studies without interruption, and the practical training received has certainly been of great service to such as expect to follow farming. The superintendent informs me that it is practicable to extend this kind of labor far beyond its present limits. I trust that the Board will favor the plans that look to such a result.

The order of the University is excellent. We have been happily free during our short history from the relics of that barbarism that still survives in so many colleges in the shape of hazing and the reckless destruction of property. During the six years in which the college building has been occupied, it is safe to say that six dollars would cover all the wanton injury it has received, while hazing and class insubordination are unknown in our experience—not a single class exercise having yet been interrupted by college tricks.

By the action of the last Legislature, military drill was made voluntary on the part of the students. This action remands the drill to an inconspicuous and unimportant place in college life. Human nature being what it is, it is certain that no body of college students will submit for any great length of time to the peremptory exactions of efficient military training unless they are obliged to do so. When obliged to submit, the great majority find no hardship in it, and drill, in such circumstances, becomes fairly popular. Military training is not essential to the successful working of a college, but I believe that it is a valuable accessory, and that it can be made to render service in several directions without detracting in any. Inasmuch as the organic law requires the teaching of military tactics in all of the land-grant colleges, and inasmuch as the General Government has, at the request of the college trustees, detailed an officer of the army to give this military instruction, it seems to me that good faith requires that the subject shall be put upon the only footing on which it can achieve success, viz., as compulsory on the whole body of male students for at least a portion of their college course. I recognize, however, the fact that public sentiment in Ohio, so far as it takes cognizance of the subject at all, is divided in regard to it.

I renew my recommendation of last year that some change be sought for in the State laws which require the University to make chemical analysis of minerals and fertilizers without expense to the parties sending them. The laws are crude and impracticable, and lead to misunderstandings and dissatisfaction. It is recognized on all sides that the fertilizer law furnishes no protection to the interests concerned, but it can

be made to impose a vast amount of useless work on the University. We are glad to render all possible service in the development and protection of the interests of the State, but we ought not to be required to expend time and money on work from which there can be no valuable outcome. If the use of artificial fertilizers has become a large enough interest in the State to demand legislative control, it will be easy to devise a scheme that will accomplish the objects sought without doing injustice to any party.

An experiment has been begun in the use of the main dormitory building which promises a real and valuable service to the institution. Tuition being free in the University, and laboratory charges being kept at the lowest point, expenses would be lighter here than in any institution of equal grade in the country, if only the price of board could be controlled. Our students had already solved this question for themselves by the formation of clubs in the vicinity of the College, in which the cost of board, room, fuel, light, and washing was kept within \$3.00 per week.

By granting the use of the dormitory free of rent to a student club, the trustees have reduced the figures for the items named above, to \$2.50 per week, on the basis of last year's prices.

The University club is in excellent hands, the building has been very orderly, and in all ways it is rendering better service to the institution than it has ever done before, and, in short, it begins to justify its heretofore unprofitable existence.

The wants and needs of an institution like this are always numerous and urgent. A careful examination of the inclosed professorial reports will give you a fair view of the state of the departments which they represent, and of the necessities of these departments, as seen by the professors. I cordially indorse the applications which these reports contain for special appropriations, and I venture to reinforce some of these requests.

The largest amount asked for any one purpose is for the department of Zoölogy. This department has received next to nothing since its original outfit. It is thronged with students, and occupies a central place in our scheme of instruction. Every dollar that goes to it serves a large number, and is in all respects efficiently used. The physiological apparatus asked for will, if furnished, prove very valuable and effective.

General James M. Comly, United States Minister to the Sandwich Islands, has placed on deposit at the University a valuable and attractive set of sea shells from the islands where he now resides. The shells were collected at great outlay of time and labor, by an American missionary,

during a long residence in the islands. They will make a unique and beautiful addition to the Zoölogical Department, and can be bought, as I understand, far below the real cost of collection. I trust that provision will be made for exhibiting and for retaining them in the University.

I heartily second the application of Dr. Townshend for means to procure one of Auxoux's models of the horse. The subject of Veterinary Science, which Dr. Townshend treats so ably, is one of vast economical importance to the State, and next to nothing has been done for it thus far by the University. Such a model would prove instructive and serviceable in the highest degree. It would be of very great value in the winter lectures to which I have already referred, and of which, of necessity, the main burden falls upon the professor of Agriculture.

It is well, also, to bear in mind that nothing has ever yet been done by the University for Botany, and that the best service that can be rendered to this great subject is the building and stocking of a good green-house. Connected as it is with Agriculture in such a close and vital way, no good reason can be given why this department should be left undeveloped and neglected.

The wants of the Chemical Laboratory are constant, but they are real. No department in the University is doing more thorough and valuable work than this, and any weakening of it by failure to meet its often recurring necessities, trenches seriously upon the efficiency of the University. I hope that it will be found practicable to carry out all the recommendations contained in the report of this department, or, better still, to inaugurate steps for the only satisfactory provision for it, viz, the erection of a separate building designed expressly for its service and necessities. No great outlay would be required, and the best results would be secured.

There is an urgent need, as the Board and the general public know, of a large hall to accommodate the Commencement audiences and the other general exercises of the University.

The Geological collection is suffering from the want of proper protection. Attention has been repeatedly called to the need of cases for the valuable materials that have been accumulated here. The need grows more urgent continually, and the collection will deteriorate in value without such protection.

The necessities of the Library cannot be lost sight of in any statement of our wants. Books, costly books, old books and new, are an actual necessity to the advanced student. His work is provincial and behind the age unless he has access to them. I am not speaking of the everyday collections that can be found on any bookseller's shelves, and that can



be bought by the pound, but of works of research and original investigation in which the progress of science is contained, and without which the student's knowledge is thin and second-hand. A few hundred dollars wisely spent each year can do something toward filling the void.

This brings me to the subject of State aid. What is asked here and what can be shown to be essential to the proper efficiency of the college, is beyond the present means of the Board to grant. If given at all, it must be by the State, and to the State all that we need for expansion into much larger and more profitable service, is as but the small dust of the balance. I do not base the plea so much on the *duty* of the State to properly supplement the bounty of the general government and to finish wisely what it has begun to build, as on its *interest* in making the largest possible use of the magnificent foundation which the land grant and Franklin county have laid. The giving that we ask is of a kind that does not impoverish. I am persuaded that no other ten thousand dollars appropriated by the last General Assembly will prove anything like as profitable an investment to the State as the sum that has been so well spent in the new Mechanical Laboratory. To provide the training that we now can give to the master mechanic and mechanical engineer on any new foundation, would cost ten times the outlay required here, for but one thing needed to be added to the half dozen essential elements that were already accumulated in the college. Like arguments can be made for the other claims that we urge.

The details of my professorial work are appended here. The subjects in which I give instruction remain as at the date of the last report, except that History will henceforth be more satisfactorily provided for by the new department. My classes for the year covered in the report have been as follows:

First year Geology, 1878-9 .....	17 members.
Second year Geology, 1878-9 .....	5    "
General History, 1878-9 .....	30   "
United States History (taught under my supervision) .....	20   "
Physical Geography, 1878-9 .....	35   "
First year Geology, 1879-80 .....	3    "
Elementary Geology, 1879-80 .....	29   "

Very respectfully yours,

EDWARD ORTON.

OHIO STATE UNIVERSITY, Nov. 13, 1879.

## DEPARTMENT REPORTS.

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### CHEMISTRY.

**EDWARD ORTON, Ph. D., President Ohio State University :**

DEAR SIR: I have the honor to present this my seventh annual report of the Chemical Department.

The class in General Chemistry for the past year numbered sixty-five. Of these, twenty-four passed at the final examination, twenty of them are again taking the study with the present class, and the remainder have dropped out of the University. The present class started with a list of sixty-five. The time allotted to the last class was but two terms. This was found, on trial, to be too short a time for the amount of study required, and provision is made, in future classes, of an additional two-fifths of a term. During a portion of the last summer term, a respectable number of the class attended a voluntary course of lectures with me, on topics connected with organic and applied chemistry. The work in this class of General Chemistry is done by lectures mainly. Lessons are, however, assigned daily in a text-book, and the progress of the students tested, partly by oral questions, and partly by frequent written examinations.

The number of desks in the Analytical Laboratory during the past year was twenty-four. Most of these were occupied all the time, the number of students actually enrolled being twenty-nine.

The Laboratory has now its full complement of desks, and can accommodate thirty-two students. More than this number applied for places, but for various reasons only thirty students were admitted. Of these, nine are in Quantitative Chemistry, three have had a term's work in Qualitative Chemistry, and the remainder began work this term. Should it be thought that there will be a further increase of students next year, I would recommend that the organic room be supplied with its complement of furniture, so that some of the quantitative students could work there. The furniture required is a long table, a foul gas hood, a steam hood, and the usual apparatus.

The Laboratory is quite well equipped for the students we now have. Another attempt has been made to secure good ventilation by utilizing the chimney flues in the east wall. I am persuaded that a great gain



would be secured by the purchase of a apparatus, for the manufacture and storage of sulphuretted hydrogen. With such an apparatus in use, we should economize material, as the waste would be greatly diminished, and also prevent the escape of this foul and poisonous gas into the larger room, at least in great quantity. This apparatus, with its fixtures, costs \$100, and I did not feel authorized to include it in my purchases for the present year. I would be glad to have it set up and ready before the qualitative students enter upon the iron group. About \$560 were expended in the purchase of apparatus and chemicals in Europe and the east, the balance being reserved for expenditures at home. Better provisions, in a few minor details, ought to be made for the quantitative students. The most important of these are a drying chest for precipitates, and additional facilities in apparatus for heating by steam. Now, that live steam is to be had all through the year, a special steam hood ought to be set up for quantitative students. The entire cost of such a hood, sufficiently large to accommodate a dozen students, would not exceed \$100, and I respectfully advise its construction. We have also a Bunsen's filter pump on hand, which I purchased for the Laboratory seven years ago, which has not been set up. I wish it could be put in place at once.

As regards the business of teaching chemistry, experience has shown me that analytical students are prone to rest satisfied with the mechanical processes of analysis if only certain results are attained, and to neglect the principles and facts upon which their science is founded. I have always endeavored to counteract this tendency by making General Chemistry an indispensable introduction to the Laboratory, and by urging and requiring, as far as I can, frequent reviews of the larger text-books. I am now more than ever persuaded that Synthetical Chemistry demands a larger place in the teaching of chemistry than is usually given. I have, hitherto, given our students as much work as I could in this direction, and have generally had enough for them in the bye products of experiment and in the preparations needed for the Laboratory. Now, that our classes have become so large, it will be necessary, if sufficient practice in synthesis is given, to provide specially for it by the purchase of a stock of crude material. No work in chemistry is more delightful to the young chemist, than the making of preparations, and it can not be left out of a complete course of instruction in the science. Its proper place, in the first year's work, is to relieve the monotony of the daily routine, and to serve as a basis for reviews. In the second year, it may go hand in hand with the analytical work, without greatly interfering with the work of analysis. I wish, then, to be authorized to engage in more extended

work of this sort, and to be allowed a special sum of money for the purchase of the requisite material.

If, in this material, a portion were of the substances used in pharmacy, our students could, with little trouble to themselves, make a fair beginning in what is called Pharmaceutical Chemistry. Several of our students have left us to obtain special instruction in pharmacy elsewhere; and I think if we were to give a few additional facilities in this direction, it would be considered an advantage by quite a number, and, perhaps, all that they desire in this department.

The work actually done by our students is necessarily limited by the time at their disposal. To become accomplished chemists requires the work of years. It seems to me a matter of congratulation that so much good work has been done. The average work is excellent, and, if there are some marked failures, I think I may report that the department has been making progress in many directions—in its facilities for instruction, in the character of the work attempted, in the cheerful and careful work of the students, and in the attainments which the most of them have made.

Respectfully submitted,

SIDNEY A. NORTON,

*Professor of Chemistry.*

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## ENGLISH AND MODERN LANGUAGES.

OHIO STATE UNIVERSITY,

*November 10, 1879.*

*President* EDWARD ORTON:

MY DEAR SIR: I have the honor to submit the following report upon the Department of English and Modern Languages:

Previous reports have stated the plan according to which the Department is organized. I have only to note a few matters of detail.

To Miss Williams is due the credit of a wise modification of our old method of elementary instruction in French and German. Whilst close grammatical study and translation into English are as much insisted upon as ever, far more of composition in French and German is done. The gain is two-fold: 1st, the practical application of abstract grammatical truth fixes it the better in the memory, and the student is the better prepared to learn the conversational use of the languages. From writing to speaking the way is short and easy.

As an experiment, I have this year postponed Rhetoric to Logic in the

second year of my course. I find the disadvantages of the change greater than the gains, and shall return to the old order.

The Wednesday public rhetorical exercises have, of necessity, been made obligatory only upon students who have completed the two year's preliminary course. I am glad to state that in the Faculty's recent revision of our courses of study provision is made for the study and regular practice of English composition by our youngest students. Though there are few things harder to teach, there is nothing the teaching of which is more necessary.

Aware of the objections urged against the offering of prizes, I am not convinced by them, and last year offered first and second prizes (in books relating to the subject) to my class in Logic. The class was a large and good one, and whilst no one with wit enough to take a prize would work only for the sake of gaining it, the competition was sharp. Miss Warner took the first, Mr. Martin the second, with three others very close behind. I take the liberty of suggesting to members of the Board and other friends of the College this pleasant and sure way of publicly recognizing good work, and putting into the hands of those who have shown special aptitudes for a given kind of study, books that will aid them in its special pursuit. I have made the same offer to the Logic class of this year, but my own and other departments still furnish full opportunities for the exercise of liberality in this direction.

I earnestly call the attention of the Board to the great need I feel daily, and mention annually, of a small appropriation for books specially selected for use by students of the three languages and literatures, and of Rhetoric and Logic of my department. The Board rightfully expects of me the broad and scholarly treatment of these subjects, and I profess to give it. But I am in the awkward condition of being forced to discuss topics and authors the most important, of which my students have no means of gaining access. It has never occurred to me to begrudge my scientific colleagues their liberally devised facilities for teaching, and illustrating what they teach, but I regret very deeply that studies, the value of which they would be the last to depreciate, must be taught without any but the meagre loans and helps from my own small library, at cost of sad wear and tear and loss, I may add. Some of the heads of scientific departments have *large* sums, within the limits of which they may draw for supplies and equipments, subject, of course, to auditing by the Board. My own and Miss Williams's work would be greatly helped if but a relatively very *small* sum were put at my disposal to draw upon from time to time. To spend any sum in the lump is not the best way. I am constantly receiving catalogues, foreign and

domestic, that give me opportunities to buy what I want at less than, often but half the ordinary retail prices. Only this summer I could have bought at private sale for \$50 books the department much needs, the regular prices of which amount to \$122. They were the best editions, and as good as new. Give me leave to spend, from time to time during the next fiscal year \$200, and the good results will be manifest at once, and till the books wear out. I respectfully ask for an appropriation of that amount, to be spent with both the freedom and the responsibility with which other heads of departments furnish their no more necessary apparatus and supplies.

The number of students in the various classes of my department is sixty-one. This is far fewer than I had last year, for two reasons: Many elect the studies of Prof. Short's new department who previously took mine as the only alternative from scientific studies save Prof. Smith's, and the large class in English of our "Required Course" now recites to Prof. Short.

I expect the best results in my own, as in every other department, from the recent revision of our curriculum. The classes will be more homogeneous as regards age, requirements, and number training, and this will be great gain. Again, the number of "irregular" students, whose choice of studies has often resulted in one-sidedness and narrowness, will be less by far, and work with a class of symmetrical mental build is much the more satisfactory.

The studies of the department of Philosophy and History are so intimately and vitally connected with those of my own that I rejoice in its establishment. It will strengthen and complement my own work very materially.

Very respectfully yours,

JOSEPH MILLIKIN,  
*Professor of English and Modern Languages.*

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## BOTANY, AGRICULTURE, AND VETERINARY MEDICINE.

*President* ORTON:

DEAR SIR: The seventh annual report of the Department of Agriculture is respectfully submitted. Instruction in this department includes Structural, Systematic, and Economic Botany, the Principles of Agriculture, and Veterinary Medicine.

A class of fifty-four in Structural and Sytematic Botany of the required course recited daily through the third term of the year. The progress of a large majority of the class was highly satisfactory.

A class of six, in Systematic and Economic Botany, of the first College year, recited daily the three terms. From the lack of suitable provision for the illustration of advanced Botany, the work of this class was less satisfactory.

A class of eight was occupied through the year with the Principles of Agriculture, and made good progress. I am happy to acknowledge a valuable addition to the agricultural section of the University library.

A class of three pursued veterinary studies through the year, and had the advantage of models and specimens recently obtained. At the present time nine students are taking the course in veterinary science. One of Auzoux's models of the horse would be of great service to this department of instruction.

A report of farm experiments, made under my direction, will be found in detail in the report of Mr. C. E. Thorne, Farm Superintendent.

The lectures to farmers, given at the University in January, 1879, having relation in their subject matter to this department may properly be noticed here. To make the State University more immediately serviceable to the agricultural interests of the State, the Board of Trustees determined to provide a course of free lectures on topics of practical interest to farmers. These lectures were given by the professors of the University, beginning January 9th, and continued four weeks—four or more lectures each day. The experiment was a decided success; the total number of farmers in attendance exceeded one hundred, and the regular daily attendance was upwards of fifty. At the close of this course of lectures those who had attended, formally and unanimously expressed their satisfaction with the course of instruction, and united in a request that a similar course should be given at the University in January, 1880.

With great respect,

N. S. TOWNSHEND.

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## DEPARTMENT OF MATHEMATICS AND CIVIL ENGINEERING.

OHIO STATE UNIVERSITY,  
COLUMBUS, OHIO, *November 1, 1879.*

EDWARD ORTON, *President :*

DEAR SIR: I make the following report on the work done in this department from November 1, 1878, to October 31, 1879, both inclusive:

The course of study laid down in the catalogue is closely followed.

The number of students in algebra was 65; geometry, 75; surveying, 34; trigonometry, 44; in other branches of civil engineering, 40; descriptive geometry, 12; astronomy 16; total 316. Omitting the number

of students who recited in more than one class, the number of different persons in the classes was 193.

The classes in surveying and kindred subjects were divided into sections of three or four students each, and each section took field exercises twice a week throughout the fall and the spring sessions, unless prevented by unfavorable weather or other sufficient cause. These exercises consisted in taking levels, measuring heights of accessible and inaccessible objects, distances of or between near or remote objects, surveying fields or the farm, measuring irregular outlines by means of offsets, setting out curves by various processes, and, finally, laying out a short line of imaginary railway, and making all the measurements for level, cross section, slope, contour, abutments of bridges and culverts, and estimating the amount of earth-work and probable cost, and making appropriate drawings.

In the winter session, when field work is ordinarily impracticable, the students are instructed in the various kinds of drawing pertaining to the work of engineers, viz., ordinary platting, topographic, isometric, and axonometric work, shades and shadows, and the general principles of perspective.

The ample appropriation by the Legislature for the purchase of a solar compass has been expended for the purpose designated, and the University is now furnished with Burt's solar compass, the patent solar attachment to the transit, an outfit complete in every respect.

To make the equipment complete we need a telescope, and I take this method of urging the proper authorities to make the purchase. The cost will not be great, but the advantage will be.

Very respectfully,

R. W. McFARLAND.

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## ZOOLOGY.

OHIO STATE UNIVERSITY,  
COLUMBUS, OHIO, *November 1, 1879.*

EDWARD ORTON, PH. D., *President Ohio State University:*

DEAR SIR: I have the honor to submit the following report:

During the past year General James M. Comly, United States Minister to the Sandwich Islands, has placed on deposit in this department a valuable collection of the shells of the Sandwich Islands and the Pacific Ocean. Provision has been made for their suitable display. It would be very desirable to make some arrangement, if possible, whereby they might become the permanent property of the University.



No other additions of importance to the equipment of the department have been made since my last report. I would respectfully suggest the following for consideration, if the means at the disposal of the Trustees will allow :

First—I would recommend that some steps be taken toward the completion of the collection of the animals of Ohio, contemplated by the organic law of the University. A full collection of specimens, either stuffed or alcoholic, of the animals found in the State, would be interesting, as well as instructive, not only to students, but to the general public.

Next, and of equal importance with the preceding, I would urge the purchase of new skeletons of the domestic animals. Those now in our possession were purchased of an inexperienced preparator during the first year of the University, and have yielded so much to the effects of six years of use by students that they are no longer a credit to the institution. The same remarks will apply with even greater force to the human skeleton in our possession. It should certainly be replaced this year by a new one, while the great importance of a thorough knowledge of our own bodies renders it desirable, in my estimation, to have one or more unmounted duplicates.

Last, and most important, I would repeat earnestly the recommendation that I have made in previous reports, urging upon the Trustees the advisability of providing for the purchase of apparatus for practical instruction and laboratory study in Physiology. This alone, of all the branches of Natural Science taught in the University, is taught at present altogether from books. Advanced students of this important science, looking to the practice of medicine, either human or veterinary, ought certainly to be enabled to derive a large share of their knowledge from nature, instead of receiving it all at second hand, as now ; and the value of such knowledge, not only to those who expect to have the lives of their fellow-men entrusted to their keeping, but also to those who will have to do with the breeding and care of our domestic animals, would far more than repay the necessary outlay.

An appropriation of two thousand dollars, to be divided equally between the purchase of physiological apparatus and the other objects mentioned, would, in my judgment, be far more than repaid in the increased usefulness of this department to the University and to the community at large. I trust that you will share this opinion with me.

Appropriations have been made by the Trustees during the past year sufficient to provide, at least in a measure, for the necessary current expenses of the dissecting-room, laboratory, and class-room.

The teaching force of the department has been increased by the appointment of an assistant for the elementary classes, resulting, as I believe, in an increased efficiency throughout the whole department.

Cleland's Physiology and MacAlister's Zoölogy have been used as text-books by the elementary classes in those studies. In the advanced classes, Foster's Text-book of Physiology and Mivart's Lessons in Vertebrate Anatomy are continued in use, while Huxley's Anatomy of Invertebrates has been introduced as a laboratory manual for advanced students in the department of Zoölogy.

The number of students in the classes of the department during the year are as follows: Elementary Physiology, fifty-two; Elementary Zoölogy, forty-five; Invertebrate Zoölogy (advanced), eight; Comparative Anatomy of Vertebrates, thirty-three; Physiology, thirteen; total class enumeration, one hundred and fifty-one. Deducting twenty-two, who have been enrolled in more than one class, the number of students who have entered classes in this department during the past year is one hundred and twenty-nine.

All of which is respectfully submitted.

ALBERT H. TUTTLE,  
*Professor of Zoölogy, etc.*

## MILITARY SCIENCE AND TACTICS.

OHIO STATE UNIVERSITY,  
NOVEMBER 1st, 1879.

EDWARD ORTON, *President Ohio State University* :

DEAR SIR: I have the honor to make my fourth annual report to you of the departments under my charge.

### I. MILITARY SCIENCE AND TACTICS.

This year the optional law has brought to the military drill thirty-eight (38) members. In addition to this number, fourteen (14) more have entered the department with the understanding that they are to be assigned to the cadet band; and, as I may have no occasion to allude to this organization further on, I take pleasure in stating here that the band leader, Sergeant Makepeace, is deserving of the highest praise for his industry, ability, and zeal in promoting the interests and efficiency of the band; it having already become an invaluable acquisition to the military department.



In the theoretical course I have this year twelve (12) students; ten (10) of these taking up the study of Tactics and Regulations, while two (2) are in the advanced Military Science class. Practical and theoretical instruction is being given as in previous years, and in accordance with methods stated in former reports.

I now pass to a very important point, namely: the present status of the drill.

That the optional plan is productive of indifferent results, is so self-evident that I need hardly attempt saying anything about it; I will, however, respectfully call your attention to the following:

By law of Congress there are thirty (30) officers on military detail in the United States. By actual correspondence with the officers on duty at the various colleges, I have ascertained that in twenty-three (23) of these colleges, or in about four-fifths of the whole number of institutions having army officers on detail, the drill is made obligatory upon all able-bodied male students, for part, at least, of their college course, and as far as I can learn with marked success in all these cases.

Wherever the military drill has been left optional with the students the most injurious results have invariably ensued in connection with the military organization. And it is natural enough that this should be so. Suppose, for example, that a student elect the drill for one year, the limit at present at our University; now, though he may not leave the same during the year, he can do so at the next, when he may be most needed in the battalion to fill the place of corporal, sergeant, or lieutenant, according to his fitness; and thus it is plainly seen that in an organization constantly shorn of its best strength and life, no certain progress can be made. One year of military training is by no means sufficient to make either sergeants, lieutenants, or captains out of the raw material that joins the ranks; three, and perhaps four, years are more likely required to bring about the result, considering that less than three hours per week are devoted to military exercises, and that, only during the academic year. As a rule, then, it is very certain that a single year of instruction in this department is insufficient, as in that time the student can not become proficient, either as captain, lieutenant, or sergeant, and surely nothing is gained by the country; if students, while undergoing military discipline, are not made familiar with the duties devolving upon these offices at least. But to expect that, with an optional system, students will, year after year, voluntarily submit to such inconvenience and "*desagréments*" as the drill may impose upon them, is, indeed, to expect a very improbable thing. Most young men, when they have their option, would rather not have to clean up their

guns, black their shoes, and brush their clothes for an inspection day; would rather not have to do the hundred and one things necessary to be done if the aim is to make soldiers of them. At the Kentucky University, (Lexington, Kentucky), by the optional law, in the course of two or three years, the battalion, numbering at the start three hundred and over, dwindled down to *seven* members!

The officer on duty at this University, (to give an example of the optional system at other institutions), writes as follows: "Drill at the Kentucky University is optional with the students, and, I am sorry to say, but few elect to go into it. I have urgently advocated the compulsory course, but as yet with no prospect of success. I consider an optional course as very unsatisfactory and objectionable to all concerned."

Without further comment I will conclude, hoping that the Legislature will see the necessity of amending the legislation which forbids making the drill compulsory.

## II. MATHEMATICS.

In this department I have charge of the Analytical Geometry and the Calculus—Differential and Integral. Eight students entered the class at the beginning of the term, but two of them, finding they had too many other studies on hand, were obliged to drop out. The class in this study will go through the Analytical Geometry and the Differential and Integral Calculus this year.

## III. ELOCUTION.

In this I have opened with eighteen students. This number includes nearly all the members of the Senior Class. I am glad to notice an increase of interest manifested in elocution, especially by members of the higher classes; and if, as I respectfully suggested in my last report, a prize or two could be offered by the Trustees—one, say, for the best declaimer of prose, and one for the best declaimer of poetry—the department would doubtless be greatly benefited thereby.

I am, sir, with great esteem,

LUIGI LOMIA,

*1st Lieut. U. S. Army, Prof. Military Science and Tactics, and Adjunct Prof. Mathematics.*

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## PHYSICS AND MECHANICS.

OHIO STATE UNIVERSITY, *November 10, 1879.*

EDWARD ORTON, PH.D., *President:*

DEAR SIR: I submit the following, my second annual report, upon the Department of Physics and Mechanics:

The number of students in Elementary Physics during the winter

term of last year was somewhat less than in the fall term. This class was discontinued in the spring term, in accordance with a vote of the Faculty removing the third term of Physics from the preparatory course to the four year courses. The number of students in the Physical Laboratory was about eight during the year; in the Mechanical Laboratory the number of students increased till in the spring term the class numbered twenty-four.

The present number of students in the class of Elementary Physics is forty-six; in Advanced Physics and Physical Laboratory, eight; in Mechanical Laboratory, eight; in Hydraulics and Drawing, two.

#### PHYSICS.

The plan upon which the teaching of Physics is at present conducted, consists in elementary work, with text-book and lectures, for two terms in the preparatory course—principles being the object rather than mathematical discussions; then a third term in the College courses, more advanced, and with partly mathematical treatment, combined with a fifth of the time in experimentation; and, finally, five terms of higher laboratory practice.

Means for graphical illustration would be much improved by a photographic camera and appliances for preparing views for the lantern. The latter I have previously found to be very useful in preparing transparencies upon glass for the lantern, from drawings expressly prepared, or from illustrations not found in the books used in the class.

#### MECHANICAL ENGINEERING.

Instruction has already been given in this subject in the higher technical branches as well as in the practical. The plan of this instruction was detailed at some length in the previous report.

It is very gratifying to be able to state that the appropriation of the Legislature of last winter has so bountifully increased our facilities for instruction in this subject as to leave us scarcely second to any of the institutions of learning of the country in this respect.

The new Mechanical Building, containing six rooms, is L shaped, and 95 by 115 feet, and 32 feet through. The west wing, 30 by 60 feet inside, contains the machine tool room, as well as the benches, vises, and tool-cases for filing and fitting. The vises and tool cases are to number sixteen. Of the machinery there are to be three engine lathes, four hand lathes, one planer, one shaper or short planer, one milling machine, one upright drill, one grinder for tools, one blowing pan for forges and cupola

furnace, fifty feet of turned shafting, and a ten-horse power steam engine for power. This machinery is all of excellent make, thus serving as models of mechanical form and design, as well as for tools. The engine is compound, and to be fitted for indicator attachment. A dynamometer may also be attached to the fly-wheel so that valuable experiments may be conducted in steam engineering.

The first room in the north wing is for forging. It is to contain four forges, anvils, swages, etc. The next room is for moulding and casting in iron and brass. The cupola furnace for iron has a capacity for four hundred pound ingots. The third room is for wood-work, leading to pattern making, and will contain outfits for eight workmen. The upper room at the intersection of the L branches is intended for machine drawing and for class instruction in the higher branches of mechanical engineering. The lower room is intended for a mechanical museum, or for a depository for machines on exhibition, models, specimens of materials, etc. A collection for it has already begun, and I trust that the great manufacturing State of Ohio will not be long in doing its share toward filling not only this room with exhibits, but the other rooms of the building with young men.

The orders which have been given for equipment, most of which have already been filled, are as follows:

Engine, shafting and pulleys.....	\$490 00
Three engine lathes .....	1,050 00
Planer and shaper.....	650 00
Milling machine and grinder.....	666 00
Upright drill .....	150 00
Four hand-lathes.....	360 00
Heating apparatus, completed .....	318 00
Drills, reamers, taps, and dies .....	78 00
Tools for wood-working.....	75 00
Tool-cases and tools for machine room.....	173 00
Anvils and forging tools .....	75 00
Vises, \$83; files, \$65; engine indicator, 72.....	225 00
Cupola, \$100; blower accessories, \$21 .....	121 00
	<hr/>
	\$4,481 00

Presented by B. F. Sturtevant, of Boston, Mass., pressure blower, \$33. Materials required consist of belting, \$90; iron, steel, and lumber, \$100; oak for benches and piping on heating apparatus, etc.

Items to fall within the amount exceeding \$4,500 and less \$5,050:

Freight to date, \$54 56; extras on building \$23.65; architect's fees,	
50 per cent. of \$4,550, \$227.50 .....	\$305 71
Probable freights and extras yet to be accounted for.....	25 00
	<hr/>
	\$330 71

Total except for materials .....	\$4,761 71
Balance for materials .....	288 00

Yours, very respectfully,

S. W. ROBINSON.

### LATIN AND GREEK.

EDWARD ORTON, PH.D.:

DEAR SIR: I have the honor to transmit my fourth annual report for the department of Latin and Greek.

The tabular statement given below shows an increased attendance over last year, and I can report an increased measure of earnestness and enthusiasm in the work of the classes under my charge. My quantum of work is four daily recitations, including the three college classes and the second year preparatory Latin class. I am assisted in the preparatory work of the department by Mr. C. M. Lewis, a student who finished his classical course in the University last year with great credit, and who has charge of the two classes beginning respectively Latin and Greek. I supervise, so far as opportunity will permit, the work of these classes, by personal observation and by examinations during the term and at its close; and I can speak in very high terms of the faithfulness and efficiency of Mr. Lewis as a teacher. In my report of last year I spoke of the value of the preparatory classes in furnishing regular and homogeneous training to students who had hitherto suffered in that regard, and who were far from being fitted for entrance into the regular college classes. No one need now be turned away from this department on account of his lack of elementary training in Greek and Latin. The class membership of the department amounts to eighty, and is distributed as follows:

#### COLLEGE CLASSES.

Second year Latin .....	7
First year Latin .....	12
First year Greek .....	7

#### PREPARATORY CLASSES.

Second year Latin .....	14
First year Latin .....	32
Preparatory Greek .....	8
Total .....	80

As to the needs of the department, I can only reiterate what I have said in previous reports as to the value of photographs illustrative of ancient life and manners, and of works of reference, both historical and

critical. I would gladly acknowledge the acquisition to the library during the past year of several much needed volumes of this description. A valuable accessory to classical work would be a classical atlas (Spruner's is the best), to be placed in the library for the convenience of the students, many of whom are unable to purchase such an atlas, of whose valuable assistance they nevertheless ought not to be deprived. If the preparatory classes continue to grow as they have done, additional facilities for their work will become an imperative necessity. The large class in elementary Latin is at present obliged to use the President's recitation room. The scheme of recitations and lectures laid down in the course of study for this department has been in the main adhered to, with such small alterations as the interests of the several classes have made necessary.

Very respectfully yours,

J. R. SMITH,  
*Assistant Professor.*

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## MINING ENGINEERING AND METALLURGY.

COLUMBUS, OHIO, Nov. 1, 1879.

EDWARD ORTON, *President* :

DEAR SIR: I have the honor to present the following report on the condition of my department.

The number of students in the course of Mining and Metallurgy during last year was three, one of whom, Mr. R. S. Towne, having completed his studies at the University, is now engaged as assistant engineer of a mining company at Leadville, Colorado.

The class of preparatory students in the required course of Mineralogy was large, numbering thirty-seven.

The present year starts out with five students in the classes of Mining and Metallurgy, while several others are arranging their preparatory work with a view of entering this department when fitted for so doing.

The instruction in this department comprises a two years' course in the special studies, Metallurgy, Mining, Theory of Veins, Mineralogy, Assaying, and Ore Dressing. The method is by lectures, laboratory practice, and, when possible, by text-books.

The mineral collection of the department has been increased by a fine set of crystal models, made under the direction of Prof. Church last spring, and by minerals purchased from time to time.

The State laboratory during the past year has been crowded with work. During the year ending November 1, 1879, one hundred and fifty-seven analyses were reported to various parties of this State, in ac-

cordance with the act of the Legislature establishing the laboratory. The value of this work to the metallurgical interests must have been very great, as the analyses were principally of iron ores, limestones, and coals. Analyses were also made of a number of fertilizers, but as there is no law requiring uniformity of composition, the occasional analysis of small samples cannot be of much value. The chemical work done by practicing chemists would have cost the parties sending the analyses over fifteen hundred dollars.

Owing to the changes in this department it will be impossible to do so much of this work for the coming year, still such as is most important will receive the attention it must here.

The laboratory will require about two hundred dollars worth of supplies during the current year, outside of the necessary expenses connected with the department of instruction.

Respectfully submitted.

NAT. W. LORD, E. M.,

*Assistant Professor of Mining.*

## HISTORY AND PHILOSOPHY.

OHIO STATE UNIVERSITY, COLUMBUS, Nov. 8, 1879.

EDWARD ORTON, PH.D., *President*:

DEAR SIR: As but two working months of the college year have elapsed since the establishment of the department committed to my care, this, my first annual report, necessarily has many of the characteristics of a prospectus.

The appreciation manifested at the opening of the year for studies in History and Philosophy was highly encouraging. Eighteen students elected advanced History, and eight the Philosophy. On account of unavoidable conflict with the hours for other recitations, these classes were reduced to eleven and six respectively. The interest displayed at the outset has been maintained, and it is but fair to state that the work performed by both classes thus far has been characterized by earnestness and fidelity.

The course of study contemplated for the department is as follows:

### PREPARATORY COURSE.

Second Term—*United States History* (Eliot.)

Third Term—*General History* (Freeman.)



## COLLEGE COURSE.

## ADVANCED HISTORY—ONE YEAR.

First Term—*The Middle Ages*. Text-book, Hallam. Lectures, especially on the English Constitution.

Second Term—*Modern Europe*. Text-book, C. D. Yonge's *Three Centuries of Modern History*. Lectures on the present condition of the Great Powers.

Third Term—*The Constitutional History and Civil Polity of the United States*. Lectures.

## PHILOSOPHY—ONE YEAR.

First Term—*The Principles of Psychology*. Lectures on the History of Philosophy.

Second Term—*The Principles of Psychology*. Lectures on the History of Philosophy.

Third Term—*Ethics*. Lectures on the History of Ethics.

In addition to the text-book work in History, each student is required to prepare a thesis each term, on a historical question pertinent to the subject in hand. In order to facilitate investigation, the student is provided at the beginning of the term with a printed list of questions, accompanied by references to works in the University, State and City libraries. The theses presented this term have generally evinced a spirit of research which is highly commendable.

It is earnestly hoped that at an early day a moderate appropriation may be made for the purchase of necessary works of reference relating to History and Philosophy, to be placed in our University library, now so barren in those departments. Without such works special study is next to impossible.

The methods employed in teaching Philosophy are such as tend to promote large liberty of opinion and original investigation on the part of the student. I am happy to acknowledge the cordial recognition of the new department as is shown by the prominence you have bestowed upon it in the recently adopted curriculum.

In addition to the work in my own department, I have charge of the class in Elementary English, composed of thirty-seven students.

Very respectfully,

JOHN T. SHORT,

*Assistant Professor of History and Philosophy.*

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 MECHANICAL AND FREE-HAND DRAWING.

EDWARD ORTON, Ph.D., *President Ohio State University*:

DEAR SIR: I have the honor to submit my report for the department of Mechanical and Free-hand Drawing.

The provision made for this necessary study has, during the past year,



been very largely utilized by the students, one hundred and eighty (180) having received instruction in branches useful either in their technical studies or for teaching in the public schools, many of the students spending two or three hours in this work daily.

The usual course of instruction includes drawing from elementary studies upwards, from flat copies or points. For drawing the round we use plaster casts, the drawing being made either in neutral tint or with the stump.

There has been an increase in the number of those attending to mechanical and free-hand drawing, tinting, and lettering.

The drawing on stone and printing are valued by students as evidence of their improvement. Some very good pictorial work has been done.

Lithographic diagrams for the use of students, drawn and printed by students, have been supplied to the department of Chemistry and the School of Letters.

In addition to time spent in tuition, I have painted in oil diagrams for the departments of Geology and Military Science and Tactics, and have painted in water colors some pathological work for the Department of Agriculture.

The improvement of the students in drawing is very satisfactory, as evidenced by their exhibit in the department at the beginning of the college year

Some of the lady students have made floral designs, drawn and painted from nature, very carefully and well executed.

For many this department will no doubt give the means of obtaining a livelihood, should circumstances require it. The large percentage of lady students taking drawing, and the interest shown in the branches of applied art as taught in this department, should insure for it the same facilities which are accorded to departments in which young men are fitted to become their own bread-winners.

During the year a few new plaster casts have been added to the drawing models (classical busts, etc.), a portion of the usual material for art training.

Every educated person is expected to possess a taste for art, which must be based on knowledge, and this is best acquired by careful study of accepted masterpieces.

I trust in the future more ample provision will be made for this department, commensurate with its claims to utility.

Respectfully submitted,

THOMAS MATHEW.

# CIRCULAR AND CATALOGUE.

# FACULTY.

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**EDWARD ORTON, PH.D.,**  
President, and Professor of Geology.

**SIDNEY A. NORTON. PH.D., M.D.,**  
Professor of General and Applied Chemistry.

**JOSEPH MILLIKIN, A.M.,**  
Professor of English Language and Literature, and of the French and German Languages.

**NORTON S. TOWNSHEND, M.D.,**  
Professor of Agriculture.

**R. W. MCFARLAND, A.M.,**  
Professor of Mathematics and Civil Engineering.

**ALBERT H. TUTTLE, M.Sc.,**  
Professor of Zoology and Comparative Anatomy.

**LUIGI LOMIA, M.Sc.,**  
First Lieut. Fifth Artillery, U. S. A.; Professor of Military Science and Tactics, and Adjunct Professor of Mathematics.

**S. W. ROBINSON, C.E.,**  
Professor of Physics and Mechanics.

**JOSIAH R. SMITH, A.B.,**  
Assistant Professor of the Latin and Greek Languages.

**NAT. W. LORD, M.E.,**  
Assistant Professor of Mining and Metallurgy.

**JOHN T. SHORT, A.M.,**  
Assistant Professor of History and Philosophy.

**THOMAS MATHEW,**  
Instructor in Free-hand and Mechanical Drawing.

**ALICE WILLIAMS,**  
Assistant in Department of Modern Languages.

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**JOSIAH R. SMITH, A.B.,**  
Librarian.

**Miss S. GLOVER,**  
Assistant Librarian.

## STUDENT ASSISTANTS.

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**EDWARD HYATT,**  
Assistant in American History, and in President's Office.

**ARTHUR CUNNINGHAM,**  
**CHARLES M. LEWIS,**  
Assistants in Latin and Greek.

**STACY B. BEEBE,**  
**HORACE L. WILGUS,**  
Assistants in Mathematics.

**DAVID O'BRINE,**  
Assistant in Chemistry.

**CHAUNCEY B. BAKER,**  
Assistant in Zoology.

## ORGANIZATION AND EQUIPMENT.

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The Ohio State University is founded on the Congressional land grant of July, 1862. By that act a large amount of the public land was turned over to the several States, the proceeds of the sales to be devoted to the better education of the industrial classes. The share of each State was proportioned to its representation in the National Legislature, and thus six hundred and thirty thousand acres came into the possession of Ohio. This munificent gift was unfortunately pressed for sale upon a temporarily overstocked market, and the State realized only fifty-four cents to the acre. The total amount of the sales (\$342,450) was, however, put at interest, and when the institution was opened, in September, 1873, the principal and interest together constituted a productive fund of something over \$500,000, the annual income from which slightly exceeds \$30,000.

The Legislature having passed an act to authorize the several counties of the State to raise money to secure the location of the University, an offer of \$300,000 from Franklin county was accepted by the Board of Trustees, and the University was permanently located at Columbus. The money furnished by Franklin county has been mainly expended in the three following items: 1. The purchase of a valuable farm of three hundred and twenty acres within the corporate limits of the city of Columbus. 2. The erection of a spacious and elegant college building and two dormitories for students. 3. The equipment of the various departments of instruction in the University.

The total value of endowment and property at the present time exceeds \$1,000,000.

The departments already established, and the provisions made for giving instruction in them, are as follows:

### I. PHYSICS.

For this subject ample provision has been made in the equipment of the institution. It is safe to say that, in the opportunities afforded for thorough study in it, the University already surpasses most of the institutions of the country. Its laboratory is supplied with expensive and well-selected apparatus, designed not only for illustration, but also for

original research in all the leading divisions of the science. Students are directed to its use in the way of original investigation as soon as they are properly prepared to undertake such work.

## II. CHEMISTRY.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow pipe in Determinative Mineralogy.

The course in Quantitative Chemistry includes both the volumetric and the gravimetric methods. The student will also be assisted in any special branch of the science that he may desire, and take up in detail topics which relate to pharmacy, medicine, agriculture, and other sciences in which the principles of Chemistry are applied.

## III. ZOÖLOGY.

The subject of Zoölogy, as its growing importance well deserves, has been assigned to a distinct professorship, and means have been provided for making the instruction in this subject thorough, practical, and extensive. A large amount of material, selected with special reference to its availability in teaching, has already been accumulated.

A dissecting-room, with good facilities for the study of veterinary anatomy, is also furnished, while for practical training in microscopy there have been supplied eight microscope stands, representing all the principal modes of construction, and nineteen objectives, giving powers up to 2,500 diameters.

## IV. BOTANY.

Permanent provision has not yet been made for this subject, but the Professor of Agriculture will give instruction in it for the present. By the will of the late William S. Sullivant, Esq., the library of this distinguished botanist has come into possession of the University. It contains not only many standard treatises on the subject, but also several rare and valuable works. An herbarium, representing quite completely the flora of Ohio, is accessible to the student.

## V. GEOLOGY.

The University is able to present unusual advantages for the study of Geology. By act of the Legislature it has been put in possession of all the collections made by the State Geological Survey during its five years of service, and these collections have been supplemented by valuable

additions of fossils and minerals from various sources. The State collection embraces a very complete representation of every geological formation shown in Ohio.

#### VI. AGRICULTURE.

The department of Agriculture, which also includes the *diseases of animals* and their *medical and surgical treatment*, is provided for in a distinct professorship, the aim of which is to acquaint the student with the theory and practice of a truly rational system in this most important field. The course extends through two years, and is rendered practical by being constantly connected with the work that is carried on upon the farm. Numerous opportunities are afforded to the students in veterinary medicine of observing the treatment of diseased animals.

#### VII. MATHEMATICS.

Under the two professorships that divide the work of Mathematics between them a full course of instruction is provided for, including also the subject of Astronomy. A term is given to Trigonometry, and one and a half terms are given to each of the two subjects, Analytical Geometry and Calculus. The work of several other departments, especially Civil Engineering, Physics and Mechanics, and Chemistry, require the constant and practical application of the knowledge acquired in mathematical study. A term is given to Astronomy, but no special facilities have thus far been furnished in this subject.

#### VIII. MECHANICAL AND FREE-HAND DRAWING.

Instruction in these subjects is provided in the University, and all needful facilities are furnished by which those who wish may acquire skill in the several departments of drawing. Drawing is made a prominent element in the education of all students in engineering.

Practical lithography and photography are also taught in this department, all the necessary apparatus being placed at the student's disposal.

#### IX. CIVIL ENGINEERING.

This course, which extends through two years, includes surveying, location, and construction of roads and railroads, construction of bridges, strength of materials, geodesy, etc. The time of one professor is chiefly devoted to this department. Field-work is extensive and varied, for the execution of which a full set of engineering instruments of the finest construction is provided.

**X. MINING ENGINEERING.**

This department has now been in operation for a year, and classes are established in the several branches belonging to it. The mining of coal and the manufacture and working of iron are recognized as leading subjects in it, but full courses of instruction are offered in general metallurgy. The department is well equipped, both for instruction and practical work.

**XI. MECHANICAL ENGINEERING.**

The University is now able to offer excellent advantages in this important subject. A mechanical laboratory has been established and is in successful operation. The Russian system of hand-training has been introduced, which insures the imparting of a measure of practical skill, together with theoretical instruction.

**XII. MILITARY SCIENCE AND TACTICS.**

In accordance with an act of Congress, an officer of the United States army has been detailed by the War Department to give instruction in the subjects named above. An extended course of lectures and recitations in Military Science is offered to such students as desire it—as is also thorough instruction in military drill.

**XIII. ENGLISH, FRENCH, AND GERMAN LANGUAGES.**

In the organization of the University, special prominence is given to the modern languages. Some of the students who resort here will study no language but their own, and it is, therefore, imperative that the opportunities for training in English should be made ample, while all who expect to attain any good degree of proficiency in the natural sciences must certainly acquaint themselves with French and German.

The course of study in the English language and literature has been made especially complete—as full and thorough as any offered in the colleges of the country. Rhetorical training of all students in the regular courses is also included here.

French and German can be pursued in courses as extensive as the needs of the student may require.

**XIV. LATIN AND GREEK LANGUAGES.**

Ample provision is also made for the study of the Latin and Greek languages, not only in compliance with those terms of the organic law of the University which forbid the exclusion of classical studies, and which



declare one of the aims of the institution thus endowed to be "the liberal education of the industrial classes," but also because of the great advantage which such study gives in acquiring a thorough knowledge of our own and other modern languages; and, in the last place, but not the least important, because of the relations which they bear to literary, historical, and scientific studies.

#### XV. PHILOSOPHY AND HISTORY.

Courses of study in these important subjects are now organized. To the study of Psychology and Ethics a year is given, and the same amount of time to European and American History. The subjects are taught both by text-books and lectures, and the student is trained, as far as possible, to habits of independent research.

## DEGREES AND COURSES OF STUDY.

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The University offers three general degrees, viz., Bachelor of Arts (A.B.), Bachelor of Philosophy (Ph.B.), and Bachelor of Science (B.Sc.) It also offers four special degrees, viz., Civil Engineer (C.E.), Mining Engineer (M.E.), Mechanical Engineer (Mech. E.), and Bachelor of Agriculture (B. Ag.)

In addition to these degrees, certificates of work done in the several departments will be granted, as hereafter stated.

The courses of study which lead to the above-named degrees can be learned from the following statements and schedules.

A Preparatory Course of two years' duration is provided for those students who enter the University directly from the common or district schools. This course includes the ordinary studies of the better grade of the high schools of the State. It is expected that the graduates of these schools can sustain examination in the entire Preparatory Course, and enter directly upon proper college work.

The Preparatory Course is shown in the following schedule:

### PREPARATORY COURSE.

#### FIRST YEAR.

First Term—Algebra, from Quadratics; Physical Geography; Latin or German.

Second Term—Algebra, completed; United States History; Latin or German.

Third Term—Botany; General History; Latin or German.

Exercises in English Grammar and Composition one hour each week throughout the year.

#### SECOND YEAR.

First Term—Geometry; Human Physiology; Latin or German.

Second Term—Geometry, completed; Physics; Latin or German.

Third Term—Trigonometry; Physics; Latin or German.

Exercises in Rhetoric and English Composition one hour each week throughout the year.

Either Latin or German, as named above, is to be chosen for a two years' course. Students looking forward to the degree of Bachelor of Arts or to the degree of Bachelor of Philosophy will take Latin: candidates for other degrees will take German.

*Text-Books*—Algebra, *Loomis*; Geometry, *Loomis*; Trigonometry, *Loomis*; Physical Geography, *Guyot*; Human Physiology, *Hurley*; United States History, *Eliot*; General History, *Freeman*; Botany, *Wood*.

The text-books in Latin and German will be found under the heads of these departments on a subsequent page.

### GENERAL AND TECHNICAL COURSES.

In the following schedules the studies required for the several degrees of the University are named. The character and amount of the work done in each can be further learned from the detailed statements in regard to the departments that follow the schedules. It will be observed that a considerable amount of the work is common to the several courses, and, further, that this common work is made, for the most part, synchronistic in the courses.

## (A.) GENERAL COURSES.

## FOR THE DEGREE OF BACHELOR OF ARTS.

*Freshman Year*

First Term.	Latin, <i>Livy, Books I and XXI</i>	Greek, <i>Leighton's Lessons.</i>	Chemistry, <i>Norton.</i>
Second Term.	Latin, <i>Cicero, De Senectute.</i>	Greek, <i>Lessons and Anabasis, Book I.</i>	Chemistry, <i>Norton.</i>
Third Term.	Latin, <i>Horace, Odes.</i>	Greek, <i>Anabasis, Books II and III.</i>	{ Chemistry, 2-5, <i>Lectures.</i> Mineralogy, 3-5, <i>Dana.</i>

Free-hand Drawing two hours each week throughout the year.

*Sophomore Year.*

First Term.	Latin, <i>Horace, Satires.</i>	Greek, <i>Memorabilia and Phaedon.</i>	{ Botany, 3-5. Zoology, 2-5.
Second Term.	Latin, <i>Tacitus, Germania, and Agricola.</i>	Greek, <i>Herodotus' Selections.</i>	Zoology, <i>Packard.</i>
Third Term.	Latin, <i>Plautus, Terence, Quintilian.</i>	Greek, <i>Euripides, Alceste.</i>	Zoology, <i>Packard.</i>

*Junior Year.*

First Term.	English Literature, <i>Anglo-Saxon</i>	Greek, <i>Homer, Odyssey.</i>	Geology, <i>Le Conte</i>
Second Term.	English Literature, <i>Middle English.</i>	Greek, <i>Sophocles, Edipus</i>	Geology, <i>Le Conte.</i>
Third Term.	English Literature, <i>Modern English</i>	Greek, <i>Demosthenes</i>	Astronomy, <i>Loomis.</i>

*Senior Year.*

First Term.	Psychology, <i>Porter.</i>	Rhetoric, <i>De Mille.</i>	Elective course in Science or History for the year.
Second Term.	Psychology, <i>Porter.</i>	Rhetoric and Logic.	
Third Term.	Ethics, <i>Ransom.</i>	Logic, <i>Jacobs</i>	

## FOR THE DEGREE OF BACHELOR OF PHILOSOPHY.

*Freshman Year.*

First term.	Latin, <i>Livy.</i>	French, <i>Grammar, Duffet.</i>	Chemistry, <i>Norton.</i>
Second Term.	Latin, <i>Cicero.</i>	French, <i>Masson's Classics</i>	Chemistry, <i>Norton.</i>
Third Term.	Latin, <i>Horace.</i>	French, <i>Masson's Classics</i>	{ Chemistry, 2-5, Lectures. Mineralogy, 3-5, Dana.

Free-hand Drawing two hours each week throughout the year.

*Sophomore Year.*

First Term.	Latin, <i>Horace.</i>	French, <i>Moliere.</i>	{ Botany, 3-5. Zoology, 2-5.
Second Term.	Latin, <i>Tacitus.</i>	French, <i>Cornille.</i>	Zoology.
Third Term.	Latin, <i>Plautus, etc.</i>	French, <i>Feuillet.</i>	Zoology.

*Junior Year.*

First Term.	History, <i>Hallam.</i>	English Literature, <i>Early.</i>	Geology.
Second Term.	History, <i>Yonge.</i>	English Literature, <i>Middle.</i>	Geology.
Third Term.	History, <i>Lectures.</i>	English Literature, <i>Modern.</i>	Astronomy.

*Senior Year.*

First Term.	Psychology, <i>Porter.</i>	Rhetoric, <i>De Mille.</i>	Elective course in Science for the year.
Second Term.	Psychology, <i>Porter.</i>	Rhetoric and Logic.	
Third Term.	Ethics, <i>Bascom.</i>	Logic, <i>Jevons.</i>	

FOR THE DEGREE OF BACHELOR OF SCIENCE.

Freshman Year.

First Term.	Analytical Geometry.	French, <i>Duffet</i> .	Chemistry, <i>Norton</i> .
Second Term.	Differential Calculus.	French, <i>Masson's Classics</i>	Chemistry, <i>Norton</i> .
Third Term.	Integral Calculus.	French, <i>Masson's Classics</i>	{ Chemistry, 2-5, Lectures. Mineralogy, 3-5, Dana.

Free-hand Drawing two hours each week throughout the year.

Sophomore Year.

First Term.	{ Elective course in Bot- any, Chemistry, or Physics for the year.	French, <i>Moliere</i> .	{ Botany, 3-5. Zooology, 2-5.
Second Term.		French, <i>Corneille</i> .	Zooology.
Third Term.		French, <i>Feuillet</i>	Zooology.

Junior Year.

First Term.	{ Elective course in Bot- any, Chemistry, or Physics for the year.	{ Elective course from list of sciences al- ready given, with addition of verte- brate Anatomy.	Geology.
Second Term.			Geology.
Third Term.			Astronomy.

Senior Year.

First Term.	{ Elective course from Science or from Psy- chology and Ethics.	{ Elective course from list of sciences given above, with the ad- dition of Geology and Physiology.	Rhetoric, <i>De Mille</i> .
Second Term.			Rhetoric and Logic.
Third Term.			Logic, <i>Jevons</i> .

It will be observed that at the beginning of the Sophomore Year of the Bachelor of Science course an advanced course in science is to be selected from such branches as have been already studied in their elementary forms in either the Freshman Year or in the Preparatory Course. The choice at this time is therefore confined to the three following, viz., Botany, Chemistry, and Physics.

At the beginning of the Junior Year the list of electives is extended by the addition of Vertebrate Anatomy, and at the beginning of the Senior Year by the addition of Paleontology, and also Philosophy and Ethics.

In the Senior Year of the courses for the degrees of Bachelor of Arts and Bachelor of Philosophy, there is also an election to be made by the student. In the former, he can choose from any of the sciences the elements of which have been previously given, and also from History; in the latter, his election is confined to the sciences.

Rhetorical exercises are required of students in all the above-named courses throughout the Sophomore, Junior, and Senior Years.

#### (B.) TECHNICAL COURSES.

The courses for the special degrees of Civil Engineer, Mining Engineer, and Mechanical Engineer, agree with the course for the degree of Bachelor of Science for the Freshman Year. They also have several studies in common with all the courses already named, as will be seen by the schedules. The course for the degree of Bachelor of Agriculture differs to a considerable extent from the courses previously described.

## FOR THE DEGREE OF CIVIL ENGINEER.

*Sophomore Year.*

<b>First Term.</b>	<b>Surveying.</b>	<b>French.</b>	<b>Analytical Chemistry.</b>
<b>Second Term.</b>	<b>Descriptive Geometry.</b>	<b>French.</b>	<b>Analytical Chemistry</b>
<b>Third Term.</b>	<b>Calculus.</b>	<b>French.</b>	<b>Analytical Chemistry.</b>

*Junior Year.*

<b>First Term.</b>	<b>Analytical Mechanics.</b>	<b>Geology.</b>	<b>Analytical Chemistry.</b>
<b>Second Term.</b>	<b>Mahan's Civil Engineering.</b>	<b>Geology.</b>	<b>Analytical Chemistry.</b>
<b>Third Term.</b>	<b>Astronomy.</b>	<b>Geology (Economic).</b>	<b>Analytical Chemistry.</b>

*Senior Year.*

<b>First Term.</b>	<b>Roads.</b>	<b>Physics.</b>	<b>Strength of Materials.</b>
<b>Second Term.</b>	<b>Drawing—Shadows and Perspective.</b>	<b>Physics.</b>	<b>Assaying.</b>
<b>Third Term.</b>	<b>Geodesy.</b>	<b>Physics.</b>	<b>Plans, etc.</b>

## FOR THE DEGREE OF MINING ENGINEERING.

*Sophomore Year.*

<b>First Term.</b>	<b>Projection Drawing.</b>	<b>Surveying.</b>	<b>Analytical Chemistry.</b>
<b>Second Term.</b>	<b>Descriptive Geometry.</b>	<b>Mahan's Civil Engineering.</b>	<b>Analytical Chemistry.</b>
<b>Third Term.</b>	<b>Special Drawing.</b>	<b>Calculus.</b>	<b>Analytical Chemistry.</b>

*Junior Year.*

<b>First Term.</b>	<b>Geology.</b>	<b>Analytical Mechanics.</b>	<b>Analytical Chemistry.</b>
<b>Second Term.</b>	<b>Geology.</b>	<b>Metallurgy.</b>	<b>Analytical Chemistry.</b>
<b>Third Term.</b>	<b>Geology (Economic).</b>	<b>Metallurgy.</b>	<b>Analytical Chemistry.</b>

*Senior Year.*

<b>First Term.</b>	<b>Theory of Veins.</b>	<b>Metallurgy.</b>	<b>Strength of Materials.</b>
<b>Second Term.</b>	<b>Mining Engineering.</b>	<b>Plans, Specifications and Estimates for Metallurgical Works.</b>	<b>Assaying.</b>
<b>Third Term.</b>	<b>Coal Washing and Mechanical Treatment of Ores.</b>	<b>Plans, Specifications, etc.</b>	<b>Mineralogy and Blow-pipe Analysis.</b>



FOR THE DEGREE OF MECHANICAL ENGINEER.

*Sophomore Year.*

First Term.	Projection Drawing.	French.	Mechanical Laboratory.
Second Term.	Descriptive Geometry.	French.	Mechanical Laboratory.
Third Term.	Calculus.	French.	Mechanical Laboratory.

*Junior Year.*

First Term.	Geology.	Physics.	Analytical Mechanics.
Second Term.	Geology.	Metallurgy.	Mechanism.
Third Term.	Astronomy.	Metallurgy.	Mechanism.

*Senior Year.*

First Term.	Thermo-Dynamics.	Physics.	Strength of Materials.
Second Term.	Prime-Movers.	Physics.	Technical Drawing.
Third Term.	Mill-Work.	Physics.	Technical Drawing.

FOR THE DEGREE OF BACHELOR OF AGRICULTURE.

*Freshman Year.*

First Term.	Surveying.	Mechanical Laboratory.	Chemistry.
Second Term.	Civil Engineering.	Mechanical Laboratory.	Chemistry.
Third Term.	Roads, Drains, etc.	Mechanical Laboratory.	{ Chemistry, 2-5. Mineralogy, 3-5.

*Sophomore Year.*

First Term.	Structural Botany.	Zoology.	Veterinary Anatomy.
Second Term.	Systematic Botany.	Zoology.	Veterinary Anatomy.
Third Term.	Economic Botany.	Zoology.	Veterinary Anatomy.

*Junior Year.*

First Term.	Soils, Manures, etc.	Geology.	Physiology.
Second Term.	Farm Crops and Tillage.	Geology.	Physiology.
Third Term.	Farm Improvement and Management.	Geology (Economic).	Physiology.

*Senior Year.*

First Term.	Domestic Animals—Varieties, etc.	Rhetoric.	Diseases of Animals.
Second Term.	Breeding and Feeding Stock.	Rhetoric and Logic.	Principles of Treatment.
Third Term.	Dairy Products.	Logic.	Particular Diseases.

The range of instruction in the several subjects named above is more particularly defined in the following statements of the work provided in the different departments of the University :

## DEPARTMENTS AND RANGE OF INSTRUCTION.

### MATHEMATICS.

The preparatory department includes Algebra, Geometry, and Plane Trigonometry. In the Freshman Year, the subjects of Analytical Geometry, Differential Calculus, and Integral Calculus are taken up, and an additional term is subsequently given to the applications of Calculus in the Engineering courses.

### CIVIL ENGINEERING.

The order of studies in this department can be learned from the schedule which exhibits the course required for the degree of civil engineer.

*Text-Books.*—The works of Loomis on Algebra, Geometry, and Astronomy. In parts of the course, works by Davies, Warren, Church, Gillespie, Mahan, Haupt, Worthen, and others.

In addition to the use and study of the text-books, the students are taught and practiced in the use of various astronomical and engineering instruments—the level, the transit, the plane-table, the sextant, the globes. They have practical field-work throughout the year, excepting only when the inclemency of the weather does not admit of it. The work consists in taking differences of level, running lines, measuring horizontal and vertical angles, determining the variation of the magnetic needle, finding the latitude by the pole star and by meridian altitudes of the sun; in fine, every variety of appropriate work which can be executed, is regularly, systematically, and thoroughly done.

### PHYSICS.

#### ELEMENTS.

The principles of Physics, or Natural Philosophy, is taught in two terms of the Preparatory Course. A text-book is used as a guide for four exercises each week, one exercise, each week, consisting of lectures illustrated with apparatus.

#### ADVANCED PHYSICS.

The full course of Advanced Physics occupies two years, embracing three kinds of exercises as follows, first: Graphical and mathematical methods applied; second—lectures on use of instruments, keeping notes, and reduction of observations; and third—personal experimentation in which the student himself uses the apparatus of the laboratory.

**FIRST YEAR.**

**First Term**—Graphics and Mathematics applied four-fifths; Experiments one-fifth.

**Second Term**—Physical Laboratory: Acoustics and Optics.

**Third Term**—Physical Laboratory: Heat.

**SECOND YEAR.**

**First Term**—Physical Laboratory: Heat.

**Second Term**—Physical Laboratory: Heat and Electricity.

**Third Term**—Physical Laboratory: Electricity and Magnetism.

In the five terms last named, the student uses the instruments of the laboratory in reviewing the work of others; or in original research. There are also combined with this, lectures on proper manipulation and care in keeping notes as conducive to trustworthy results; also the theory of errors as regards instruments, reduction of observations, etc. The student is enabled to pursue his experiments thoroughly and extensively by means of the apparatus of the department, which includes many rare and valuable instruments.

*Works of Reference. Accessible to the Student.*—Atkinson's Ganot's Physics, Deschanel's Physics, Kohlrausch's Physical Measurements, Pickering's Physical Manipulations, Stewart's Heat, Jamin's Physique, Clark and Sabine's Electrical Tables and Formulæ, Higgs' Electric Lighting, Schwendler's Electric Testing.

**MECHANICAL ENGINEERING.**

This course is intended for those who desire to prepare themselves either for the profession of Mechanical Engineering, for superintending the construction of machinery, or for managing machinery in manufacturing establishments. In it instruction in Principles is combined with Practice. The former is mostly given by lectures, while the latter is confined to the Mechanical Laboratory.

The course includes the following special studies, all of which must be passed before taking the degree:

**MECHANISM AND DRAWING—ONE YEAR.**

Principles of Mechanism.

Machine Designing and Drawing.

Machine Drawing.

**PRIME MOVERS AND MACHINERY—ONE YEAR.**

Thermodynamics.

Prime Movers.

Machinery and Mill-work.

Besides the above there will be required, for graduating:

Three terms of Elementary Laboratory Practice.

One term of Machine Construction in Laboratory.

One term of Strength of Materials.

## EXPLANATION OF THE COURSE.

In the Principles of Mechanism are studied the parts of Machinery by pairs ; or, elementary combinations of mechanism. In this the form and arrangement of the parts necessary for securing the desired modification of motion is sought.

In the Machine Designing the student takes up some problem in the shape of a particular machine for a special purpose. The forms, dimensions, and arrangements of the parts are decided upon, and then a drawing is carefully made of the whole. Detail drawings to regulation size are then made, and finished in shade lines, as done in the best shops. The quality of these drawings is sufficient for the requirements of photo-engraving for illustrations upon circulars.

In Thermodynamics are studied the principles which form the groundwork of all heat engines.

In Prime Movers are studied all kinds of heat engines, such as steam, hot-air, etc., and also wind and water-wheels.

Mill-work and machinery takes up valve-gears, fly-wheels, governors, efficiency of parts of machines, strength of parts, etc.

The Mechanical Laboratory is intended for acquainting the student with the materials used in machine construction ; with the forms customary in machinery ; to impart a degree of skill in the use of tools, and a knowledge of the operations and practices of shops.

The first term consists of the actual use of tools in executing a set of forms chosen, with a view to supplying the greatest possible amount of practical instruction for the time. This is combined with weekly lectures on tools and their use.

The second term carries the above practice to the fitting together of parts, and to the use of machine tools, such as the lathe, planer, etc. This is combined with weekly exercises in designing and drawing of machine elements, such as cranks, bearing boxes, stub-ends, etc.

The third term is fully occupied in fitting parts carefully together, as in the joints of machinery, and in finishing the surfaces by scraping, polishing, burnishing, etc. This is in combination with a weekly exercise in the invention of simple machines for specific operations, such as bending wire staples, cutting wooden combs, etc.

The fourth term of Mechanical Laboratory practice is constructive. It is taken in connection with the principles of mechanism. In the latter, problems in mechanism are worked out, forms and dimensions assigned to the parts, and then these are executed in the Laboratory, resulting in models of mechanical movements for the cabinet.

The legislative grant of last winter, providing for a Mechanical Building and equipment, has very materially added to the means of instruction in the above named subjects. A general description of the building and equipment will be found in the report of the Secretary on a preceding page.

Projects will be assigned to the student, from time to time, on topics connected with his studies, requiring him to take indicator cards, test the efficiency of boilers, visit manufacturing establishments, etc., and report. Such reports should be neatly made out on the regulation papers of the Department. These will be taken, in part, for the examinations, and retained for the cabinet.

*Text-Books and Works of Reference.*—Rankin's Steam Engine, and Machinery and Mill-work ; Weisbach's Mechanics ; Willis's Principles of Mechanism ; Belanger's Cinematique ; Zenner's Traité de la Chaleur ; Neville's Hydraulics ; Clausius and McCulloch on Heat ; Sellers' Manual of Machine Tools ; Shelley's Workshop ; Unwin's Elements of Machine Design ; Nicholson on Files and Filing.

## CHEMISTRY.

All students who wish to obtain a degree are required to study Chemistry for two and two-fifths terms. During this year General Chemistry, together with its most important applications to the arts, is taught by the use of text-books and of lectures, illustrated, by an ever-growing collection of the materials used in manufactures, and by a very complete suite of experiments.

After the completion of this elementary course, those who desire to devote special attention to Chemistry enter the analytical laboratory, where they can carry on their work for two years or more. This laboratory work is *required* only of students in Civil Engineering and in Mining. Any other student may enter the laboratory if his time and his strength permit.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy. He is also employed in making various compounds, and, if his time permits, studies exhaustively one or more of the elements and its important compounds.

The course of Quantitative Chemistry includes both the gravimetric and volumetric methods. The analyses are at first confined to those compounds whose structure is known, and afterwards extended to such bodies as the student may require in the special branch of the science to which he desires to devote himself. Opportunity is offered for the study of coals, minerals, fertilizers, soils, or of the useful and waste products in manufactures.

If the student desires, he will also be assisted in taking up in detail topics which relate to Agriculture, to Pharmacy, to Medicine, and to other sciences, or to arts in which the principles of chemistry are applied. A full course of assaying is given in the Mining Laboratory, which is open also to students of chemistry.

A summary of the course is given below.

### REQUIRED OF ALL CANDIDATES FOR GRADUATION.

#### GENERAL CHEMISTRY—TWO AND TWO-FIFTHS TERMS.

Inorganic and Organic Chemistry, and the applications of Chemistry to the Arts.

#### SPECIAL COURSE.

##### FIRST YEAR.

First Term—Qualitative Analysis: Exercises in Blow-pipe and Flame Reactions, Reactions of Single Bases and Acids.

Second Term—Qualitative Analysis continued: Determination of Mixtures, Blow-pipe Mineralogy, Preparation for Compounds.

Third Term—Quantitative Analysis, Stoichiometry.

##### SECOND YEAR.

Quantitative Analysis: Special studies in Chemistry applied to Pharmacy, to Agriculture, to Manufactures, and to the Arts.

*Text-Books.*—Norton's Chemistry, Fowne's Chemistry, Beilstein's Manual, Galloway's Qualitative Chemistry, Will's Analytical Chemistry, Classen's Quantitative Chemistry, Fresenius's Quantitative Chemistry, Caldwell's Agricultural Chemistry.

*Books of Reference.*—Watt's Dictionary of Chemistry, Handwörterbuch des Chemie, Gmelin's Hand-Book of Chemistry, Wagner's Chemical Technology, Graham-Otto's Chemie, Rose's Analytischen Chemie, Hoppe-Seyler and Gorup-Besanez's Physiologischen Chemie, Elderhorst's Determinative Mineralogy.

### MINING AND METALLURGY.

The course in Mining Engineering secures to the student careful instruction, with ample allowance of time, in the three fundamental branches of the art—mining, preparation of the ore, and its metallurgical treatment. These courses will comprise lectures, the study of text-books, preparation of maps, drawings, and sections, and visits to existing works, with careful reports upon them, and practice in estimates and designs.

For Assaying, there is a full equipment of furnaces and ores for the dry assay, and the wet methods are taught in the chemical laboratory.

An ample collection of minerals is provided, comprising all species with which the mining engineer should be familiar, and to this the students have constant and familiar access.

Crystallography is taught by the aid of a complete collection of large wood models, made especially for the department, and containing every common form.

*Text-Books and Books of Reference.*—Dana's Mineralogy, Egleston's Crystallographie Tables, Callon's Mining, Andre's Mining and Mining Machinery, Phillips's Metallurgy, Egleston's Metallurgical Tables, Rittenger's Aufbereitung, Gätzschemann's Aufbereitung, Bodemann & Kerl's Assaying, Mitchell's Assaying, Von Cotta's Ore Deposits.

### GEOLOGY AND PALEONTOLOGY.

In the preparatory course one term is given to Physical Geograpy. In all of the college courses two terms of General Geology are required, and in two of the engineering courses a third term is added, in which the subject of Economical Geology is taken up. The former subject is provided for in the first and second terms of the Junior year, and the latter in the third term of the same year.

Le Conte's *Elements of Geology* is made the basis of the instruction in the general course; Economical Geology is taught by lectures.

Students desiring to pursue Geology further can elect it as one of their studies throughout the Senior year. In this year, particular attention will be given to the Geology and Paleontology of Ohio, for the illustration of which subjects the museum affords ample materials. These subjects will be taught by lectures, by practical work in the museum, and as far as possible by field practice.

*Text-Books and Works of Reference.*—Le Conte's *Elements of Geology*, Dana's *Manual of Geology*, Lyell's *Principles of Geology*, Nicholson's *Manual of Paleontology*, Geological Reports of Ohio and other States.

### AGRICULTURE AND BOTANY.

There are three years of work provided for the student in the department of Agriculture. In the first year, Soils are made a subject of examination, their geologic relations and origin are explained, their composition is shown, and how it is determined; the special adaptations of soils to particular crops and modes of culture is shown, and how to restore exhausted fertility; the management of pastures and meadows; the different grasses, clovers, and other forage plants; the

culture of field crops, such as corn, wheat, oats, barley, rye, potatoes, etc.; also, the value and application of animal manures, marl, gypsum, wood-ashes, lime, superphosphate, guano, and city sewage.

The work named above occupies the first and second terms. During the remainder of the year the following subjects are treated: Work of the farm and improvements; Drainage, draining-tools, and the manufacture of drain-tiles; Irrigation, its value and methods; Farm Roads, and how to make them; Fences, material, construction, and cost; Rural Architecture, applied to the erection of farm-houses, barns, stables, etc.; Farm Machinery.

The second year is mainly spent on the following topics: The natural history, description, and adaptation of the various domestic animals—horse-training, cattle-feeding, dairy management, wool-growing, etc.

The work of the third year is spent on the general subject of Veterinary Medicine. The range of instruction can be learned from the topics named below: General Principles, Causes, Symptoms, Elements of Disease; Classification of Diseases, Principles of Treatment, and Remedial Agents; Particular Diseases and Operations. These are carefully studied, and, so far as opportunity can be obtained, diseases are treated, and operations made, under the inspection of the class.

In Botany, a term of elementary instruction is provided in the preparatory course. The general facts of vegetable structure and classification are here treated. In the Sophomore Year, part of a term is occupied in a course of lectures on Economical Botany. The above named work is required of all candidates for the general degrees of the University. For students who desire more extended instruction in this subject a course of one year is provided, in which the three subjects named above, viz., Structural, Systematic, and Economical Botany, are treated in more detail. This year's work is elective for any candidate for the general degrees, and is required of students seeking the degree of Bachelor of Agriculture.

### ZOOLOGY AND COMPARATIVE ANATOMY.

The work of this department comprises the study of animal life, alike from the anatomical and the physiological aspect. Preparatory students receive, during the first term of their second year, instruction in this department in the elements of human anatomy and physiology. It is the object of this instruction to impart to these students such general knowledge of the structure and functions of their own bodies as will serve as a guide to their maintenance in a state of health and usefulness. Huxley's *Lessons in Elementary Physiology* will be used as a text-book, accompanied by lectures and by anatomical and histological demonstrations.

All students who are candidates for bachelors' degrees receive instruction in Zoölogy during their Sophomore Year in this department. This instruction will be by lectures, with collateral reading, demonstrations, and such laboratory exercises as the size of the classes from year to year will permit, and will have for its object to impart to the student a clear conception of the animal kingdom as a whole rather than a mere technical familiarity with one of its lesser divisions, to illustrate the objects and methods of classification, to indicate the more important of those morphological relations on which all intelligent classification is based, and to give some insight into those principles which underlie all the phenomena of animal life. All the classes of the animal kingdom (as well as the orders of the more important classes) will receive consideration, but the larger proportion of the student's attention will be directed to the classes



and orders of the invertebrata, partly because they include those forms least likely otherwise to come under their observation, and partly because a whole year may be afterwards given, by those who wish, to the study of the vertebrates.

At the beginning of the Junior Year, students who are candidates for the degree of Bachelor of Science have open to their election in this department a year of work in the comparative anatomy of vertebrates, that may be antecedent to the special work in palæontology of the department of geology, or to a year of special work in physiology in this department, both of which are elective studies in the senior year. The work in vertebrate anatomy will be chiefly performed in the laboratory and the dissecting room of the department, supplemented by lectures and such collateral reading as may from time to time be indicated.

To such Seniors as have performed the work in anatomy just described, and to no others, the advanced work in physiology and histology already referred to will be open. This will include lectures, demonstrations, and laboratory exercises in physiology, accompanied by a course of laboratory training in the facts and methods of histology. Foster's Text-Book of Physiology and Frey's Compendium of Histology will be used as text-books, and Foster and Langley's Practical Physiology and Schäfer's Histology as laboratory manuals.

Students who are candidates for the degree of Bachelor of Agriculture will receive instruction in this department, during their Sophomore Year, in Veterinary Anatomy. The greater portion of this time will be spent in the dissecting room, Chauveau's Anatomy of the Domestic Animals being used as a manual. This will be followed in their junior year by the advanced work in physiology and histology already described.

The various classes of the department will be open to all special students who give satisfactory evidence of their fitness to enter them; and the facilities of the department will be freely afforded to all such who wish to pursue any special line of study connected with it.

#### DEPARTMENT OF ENGLISH AND MODERN LANGUAGES.

It is no longer a question that a thorough knowledge of the English language and literature as they are, requires a knowledge of them as they were in the several stages of their growth, beginning with the beginning, Anglo-Saxon. The following course is, accordingly, a progressive, historical one:

First Term—Anglo-Saxon (Sweet's Anglo-Saxon Reader).

Second Term—Middle English (Chaucer's Prologue, Knight's Tale, etc., Clarendon Press edition).

Third Term—Modern English—Shakspeare (Hamlet, Hudson's edition; Tempest, Clarendon Press edition).

Besides these text-readings, lectures, historical and critical, upon literature, run throughout the year.

Rhetoric and logic belong to this department, and our year is divided about equally between them. Rhetoric, taught for its value both as an aid to original production and to the just criticism and enjoyment of the works of others, runs through the first term and into the second. The remainder of the second term and all of the third are devoted to logic, taught—first, as the foundation and all-controlling, though often hidden, law of all good thinking and writing; second, for its bearing upon the several sciences taught in the University; third, as indispensable in aid of philosophy and a course of philosophical reading; fourth, as a discipline for the mind, than which there is no better.

**First Term—Rhetoric:** De Mille's Elements.

**Second Term—Rhetoric finished; Logic:** Jevon's Elements.

**Third Term—Logic.**

Much of the instruction of this year is oral, either in the shape of formal lectures or daily expansions and illustrations of the text-books. A special course of fifteen lectures on Poetry supplements the text-book on Rhetoric, and from the beginning to the end of the course in Logic, lectures are given, notes of which are taken and recited from.

*Books recommended for Reference*—Marsh: Lectures on Origin, and History of English Language; Lectures on English Language and Literature; Taine's and Craik's Histories of English Literature; Morris: English Accidence; Grein: Angelsächsische Bibliothek; Earl: Philosophy of the English Tongue; Hamilton's Lectures on Logic; Thomson's Outlines of the Laws of Thought; Mansel's Prolegomena Logica and Edition of Aldrich's Logic; Ueberweg's System der Logik; Quintilian's Institutes, Theremin's Rhetoric; Kames' Elements of Criticism; Hepburn's Manual of Rhetoric.

## GERMAN AND FRENCH.

In view of the fact that mental training is a chief aim of every part of a college course; that, for purposes of literary culture, the main thing a college can give is the easy reading and accurate understanding of the masterpieces of the language studied; and that in an institution in which the sciences are so prominent as they are with us, it is of the utmost importance that the ability to use foreign text-books and works of reference be acquired as soon as possible, the so-called "Conversational Method" is not employed, and "learning to speak" French and German is an incident rather than an aim of the course. This is of purpose, and according to the best college usage and authority. I believe, too, that the careful and continuous use of the grammar, lexicon, and well-chosen text, with constant practice in composition, is the only sure and usually the shortest road to accurate and fluent speech. Where small classes, with little else to do, can spend several hours each day with the teacher, a different method will often succeed; but in a college, and to meet the ends of a college, more and better results are secured by the grammatical and literary method. Give the student an accurate knowledge of the inflections and syntax of a foreign language; make him master of a full and idiomatic vocabulary of its words; let the reading of varied and well selected texts teach him the peculiarities alike of the thought and rhythm of the speech of the men whose works he studies; accustom him to the oral and written rendering of the foreign text into English, and of English texts in the foreign speech, and he will no longer be helpless in the presence of a foreign poem or text-book, and learning to speak will be easily learned and remembered.

A two years' course in each of the two languages is provided for. In either course the student attends mainly to grammatical doctrine and literal versions, at first, and to the literary contents and characteristics of what he reads as he progresses. Lectures upon the respective literatures run through the second year of the courses.

## GERMAN.

### FIRST YEAR.

**First and Second Terms—Steiger's Revised Edition of Ahn's Method.**

**Third Term—Schiller's Der Neffe als Onkel: Composition.**

## SECOND YEAR.

First Term—Goethe's *Egmont*; Lessing's *Nathan der Weise*.

Second Term—*Nathan der Weise* finished; Richter's *Quintus Fixlein*.

Third Term—*Quintus Fixlein* finished.

## FRENCH.

## FIRST YEAR.

First Term—Duffet: *French Grammar and Exercises*.

Second Term—Grammar continued; Masson's *French Classics*, vol. 5.

Third Term—*French Classics* continued.

## SECOND YEAR.

First Term—Moliere: *Les Fourberies de Scapin*; Racine: *Athalie*.

Second Term—Corneille: *Cinna*; Racine: *Andromaque*; Bridge's *History of French Literature*.

Third Term—Feuillet: *Le Roman d'un jeune homme pauvre*; Bridge's *History* continued.

*Books of Reference*—For German: Vilmar's *Literatur Geschichte*; Wackernagel's *Geschichte der Deutschen Literatur*; Hosmer's *Hist. of German Literature*; Bayard Taylor's *Sketches of German Literature*.

For French—Brachet: *Grammaire Historique*; Chevallet; *L'Histoire de la langue Francaise*; Vinet: *L'Histoire de la Literature, du xviieme Siecle*; Parton: *The French Parnassus*; Van Laun: *History of French Literature*.

## LATIN LANGUAGE.

The course in Latin includes two years of preparatory work, and two years of regular college work. The preparatory course is designed for beginners, and those who have had irregular and partial training, and thus can not compete successfully in the college work with those who have been systematically taught in high schools.

The course of study is arranged as follows:

## PREPARATORY LATIN.

## FIRST YEAR.

First Term—Leighton's *Latin Lessons*.

Second Term—Leighton's *Latin Lessons*; Cæsar, *De Bello Gallico*, Book I.

Third Term—Cæsar, *De Bello Gallico*, Books I and II.

## SECOND YEAR.

First Term—Vergil's *Æneid*, Books I, II, and III.

Second Term—Vergil's *Æneid*, Book IV; Cicero, *In Catilinam* I, II

Third Term—Cicero *In Catilinam* III, IV; *Pro Archia Poëta*.

## COLLEGE COURSE.

## FRESHMAN YEAR.

First Term—Livy, Books I and XXI.

Second Term—Cicero, *De Senectute*, *De Amicitia*.

Third Term—Horace, *Odes*.

During the year lectures are given on Roman History, and the reading of the authors is accompanied with exercises in Latin prose composition, and in written translation.

#### SOPHOMORE YEAR.

First Term—Horace; Satires, Epistles, and *Ars Poëtica*.

Second Term—Tacitus, *Germania* and *Agricola*.

Third Term—Plautus, *Captivi*; Terence, *Andria*; Quintilian, *Institutis Oratorica*.

Lectures are given during the year on the Latin language and literature.

Allen and Greenough's grammar is used throughout the entire course.

Candidates for admission to the Freshman class are examined in Latin Grammar (Allen and Greenough's preferred); Latin composition; three books of Cæsar's *De Bello Gallico*; five orations of Cicero, and four books of Virgil's *Æneid*.

#### GREEK LANGUAGE.

The course in Greek now includes three years of college work, and is arranged as follows:

##### FRESHMAN YEAR.

First Term—Leighton's Greek Lessons.

Second Term—Greek Lessons completed; Xenophon's *Anabasis*, Book I.

Third Term—Xenophon's *Anabasis*, Books II and III.

##### SOPHOMORE YEAR.

First Term—Xenophon's *Memorabilia*; Plato's *Phædon*.

Second Term—Herodotus, Selections; Greek History.

Third Term—Euripides, *Alcestis*.

Lectures are given during the year on Greek History, Antiquities, and the Drama.

##### JUNIOR YEAR.

First Term—Homer's *Odyssey*.

Second Term—Sophocles, *Ædipus Tyrannus*.

Third Term—Demosthenes; *Olynthiacs* and *Philippics*.

Lectures are given during the year on the Greek language and literature. Exercises in Greek prose composition constitute an important feature of the course. Goodwin's Greek Grammar is used throughout the entire course.

#### HISTORY AND PHILOSOPHY.

Elementary instruction in United States and General History is afforded in the Preparatory Course. One year of Advanced History is provided. This course is required of candidates for the degree of Ph. B., and is elective for the degree in arts. The subjects which receive attention during the year are: The History of the Middle Ages; The History of Modern Europe, and The Constitutional History and Civil Polity of the United States.

The instruction is by text-books and lectures, to which special work for the class is added. The results of the special study performed by each student are embodied in theses, which are read before the class.

The course in Philosophy extends through one year, embracing Psychology, History of Philosophy, and Ethics. It is required for the degrees in Philosophy and Arts, but

is optional with candidates for the degree of B. S. A knowledge of the laws of thought and moral action is the end toward which the instruction in this course is directed. At the same time the history of Philosophy receives a large share of attention.

The work in these subjects is distributed as follows :

## HISTORY.

### PREPARATORY COURSE.

#### *First Year.*

Second Term—United States History (Eliot).

Third Term—General History (Freeman).

### COLLEGE COURSE.

#### *Advanced History.*

First Term—The Middle Ages ; text-book, Hallam. Lectures, especially on the English Constitution.

Second Term—Modern Europe ; text book, C. D. Yonge's Three Centuries of Modern History. Lectures on the present condition of the Great Powers.

Third Term—Constitutional History and Civil Polity of the United States. Lectures.

## PHILOSOPHY.

First Term—Principles of Psychology ; lectures on the History of Philosophy.

Second Term—Principles of Psychology ; lectures on the History of Philosophy.

Third Term—Ethics ; lectures on the History of Ethics.

*Text-books and works of reference*—The histories by Hallam, Sheppard, Sismondi, Gibbon, Martin, Von Sybel, Thiers, Alison, Motley, Dunham, Von Raumer, Von Ranke, Gervinus, Savigny, Bryce, Green, Freeman, Hume, Macanlay, Turner, Stubbs, May, Seeley, Arndt, etc., etc.

*Constitutional history of the United States*—Curtis's History of the Constitution ; Von Holst's Constitutional History of the United States ; Frothingham's Rise of the Republic ; The Federalist ; the works of Adams, Hamilton, Jefferson, Madison, Webster, and Elliot's Debates.

*Psychology*—Porter, Hamilton, Kant, Carpenter, Spencer, Bain, Maudsley.

*History of Philosophy*—Schwegler, Ueberweg, Lewes, and Bowen.

*Ethics*—Bascom, Calderwood, Spencer.

## PROVISIONS FOR SPECIAL STUDENTS.

To students entering the University for the purpose of taking some special study, and who do not propose to complete a regular course, *full freedom in the selection of the branches which they will pursue is granted, subject only to the necessary limitation that they are prepared to take up with advantage the studies which they select.* They will enter the classes organized for the regular courses, and they can not be allowed to impair the quality of work done in the classes through their own inadequate preparation. Advanced students will find every facility for special work. The preliminary examinations are required of special students.

## PROVISION FOR INSTRUCTION IN AGRICULTURE.

The University recognizes its obligations, imposed in the terms of the grant on which it is founded, to the great industrial interest of agriculture. This obligation it aims to meet in various ways. It fixes its standard of admission so that students may enter its classes from the common schools. It provides for thorough instruction in the branches of science on which Agriculture depends. It has established a professorship of theoretical and applied Agriculture. It has laid down a special course leading to the degree of Bachelor of Agriculture. It has instituted courses of lectures in the sciences relating to Agriculture, and in theoretical Agriculture, to which the farmers of the State are invited without charge.

While it is believed that the varied and complex questions with which the farmer has to deal, justify and require, for their most successful treatment, the extended and thorough courses of study necessary for the degree of Bachelor of Agriculture, it is still recognized that comparatively few will return from a six years' course of study to the farm again, and, therefore, all possible advantages are offered to young men from the country who enter the institution for a shorter time. The work of the department of Agriculture is shaped so as to give to this class as large a measure of service as possible for whatever time they are on college ground.

## LITERARY SOCIETIES.

There are two Literary Societies in the University, the *Alcyone* and the *Horton*. Both are provided with rooms in the University building, the equipment of the Alcyone hall having been mainly furnished through the generosity of the late John G. Deshler, of Columbus. The Societies are vigorous and effective, and furnish to the student a very desirable training in public speaking and parliamentary order.

## ADMISSION.

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For admission to the Preparatory Department of the University, students must possess a competent knowledge of the branches taught in the common schools, viz.: Reading, Orthography, Writing, Grammar, Geography, Arithmetic, and Algebra through simple equations.

The attention of those proposing to enter the University is especially directed to the terms above given. A competent knowledge of the common school branches is required. The University does not undertake to do the work which the common schools are able and willing to do, viz., that of grounding the student in the elements of an English education. He must bring with him a fair measure of the training which these schools are prepared to give. If it be asked what is a competent knowledge of these branches, it may be answered that the candidate should certainly have knowledge enough of them to entitle him to a teacher's certificate from a county board of examiners.

Graduates of the high schools of the State and persons holding teachers' certificates of the twelve months' grade are admitted to the Preparatory Department without examination.

For admission to the College courses, the student must sustain examination in the studies of the Preparatory Course as well as in the common branches above named. The Preparatory Course, as now constituted, agrees very well with the courses of instruction in the better grade of high schools of the State. The full requisitions, then, for admission to college standing are as follows:

English Grammar,  
Common School Geography,  
Physical Geography,  
Arithmetic,  
Algebra,  
Geometry,  
Trigonometry,

Botany,  
Physics,  
Human Physiology,  
United States History,  
General History,  
Latin or German to the amount of a  
two years' course.

Students who do not design to complete a regular course of instruction are allowed to select such studies as they are prepared to carry on with profit to themselves and without detriment to the regular classes.

Students are admitted to advanced standing in any of the courses on

their sustaining examination in the work required in the University for such standing.

Students entering from other colleges are required to bring certificates of honorable dismissal.

### EXPENSES.

1. *College Dues* —A charge of \$5.00 a term, or \$15 00 a year, is made against all students, under the head of incidental expenses. *There is no charge for tuition in any department of the University;* but advanced students in Chemistry and Physics are required to pay fees to cover, in part, the cost of materials consumed, and the deterioration of the expensive instruments employed. The fee in the Chemical Laboratory is \$10.00 per term, and in the Physical Laboratory \$7.00 per term. These dues are required at the opening of each term.

2. *Board*.—There are two dormitories on the College grounds provided for the use of students. The smaller of these provides unfurnished rooms, *rent free*, to such students as desire to board themselves, and thus to reduce their expenses to a minimum. Twenty students can be accommodated in the building, two students being assigned to each room. The expense of living in this way falls below \$2.00 per week.

The larger dormitory can accommodate seventy students. It is for the present year turned over to the University club, *rent free*. Board, furnished room, fuel, light, and washing are, at present prices, supplied for less than \$3.00 per week. New students will not, however, be admitted to the club without special recommendation.

Boarding clubs are also organized in the neighborhood of the College by students, in which expenses are also kept at very low rates.

Board, with furnished rooms, can be obtained in private families within convenient distances of the College, at rates varying from \$3.50 to \$5.00 per week.

Free access to the College is secured by two lines of street railroads, which connect it with the central portions of the city.

There is a large amount of work on the College farm that can be performed to advantage by students, and for which they are paid at the current rates for such labor. A number of students defray all their college expenses by such labor. In the assigning of work, preference is given to students in the department of Agriculture and to those who are ready to devote a certain number of hours each day to the tasks required. *The University does not guarantee work to all applicants.*

A college uniform has been adopted with which all students who elect military drill are required to provide themselves. The cost of the uniform is about \$20.00.



SUMMARY.

The expenses of a college year of thirty-eight weeks, will include the following items, viz. :

College dues .....	\$15 00		\$15 00
Board, room, etc., at \$3.50 per week.....	133 00	at \$4 50	171 00
	<hr/>		<hr/>
Total .....	\$148 00		\$186 00

This estimate provides for light, fuel, and washing, but does not include text-books nor charges for laboratory supplies. Students boarding themselves can reduce the lowest of these estimates by at least \$28—making a total of \$110.

RULES AND REGULATIONS.

The following rules and regulations, among others, are now in force in the University.

ADMISSION.

1. Candidates for admission to the University must undergo preliminary examinations in the several branches required for admission.
2. Students applying for admission to an advanced class, must be examined on the previous work of the class which they desire to enter.
3. Graduates of High Schools in Ohio, on presenting their diplomas, are admitted to the Preparatory Department of the University without examination. Applicants having a teacher's certificate of twelve months, are also admitted without examination, except in Algebra, in cases where this study is not included in the certificate.
4. A certificate of honorable dismissal is required of students coming from other colleges.
5. The payment of term-bills is required of all students by the second Wednesday of each term, as the condition of remaining in college.

STANDING.

1. The standing of students shall be reported at the end of each term as "passed with merit," "passed," "conditioned," or "failed;" such standing to be determined by examinations, written, wherever possible.
2. The expression "conditioned" signifies "subject to re-examination at the beginning of the following term."
3. No student is allowed to take less than three, or more than four studies; and no student conditioned in any study will be permitted to take more than three studies the following term.
4. Students must pass in at least two of the studies of each term, in order to retain their place in college.
5. Students conditioned in more than one study, must pass a satis-

factory examination in one of these studies before regaining their place in college.

6. Students failing in two of the studies of a term, forfeit their place in college thereby.

7. Students who fail in the term examinations, or in an examination for conditions, are required to take the study or studies in which they fail, on their occurrence, in the following year, except when excused by the faculty.

8. Students failing on a re-examination for a condition, are dropped from that class, if a continuous one.

9. Absence from any examination is construed as a failure therein.

10. Students in any three-term class who fail to attain the grade "passed" at the end of more than one term, shall be required to repeat the work of the whole year, unless excused by the professor in charge; and the students in any two-term class who are reported as "failed" at the end of the second term, may be required by the professor in charge to repeat both terms' work.

#### DEMERITS.

1. Absence and tardiness may be excused by the President; failures, by the professors in whose classes they occur.

2. Four demerits shall be recorded against a student for every unexcused absence from a class; two for every unexcused failure in recitation, and one for every unexcused tardiness; and other offenses shall be rated as the faculty shall, from time to time, determine.

3. When any student has received ten demerits in any one term, or twenty-five in the first two terms, or thirty in the year, notice thereof shall be sent to the parent or guardian of such student.

4. Any student who receives twenty demerits in any one term, thereby forfeits his connection with the college; and any student receiving thirty-five demerits in the first two terms, or forty in the year, forfeits his connection with the college.

#### MILITARY DRILL.

1. Students electing Military Drill will be subject to the regulations established by the faculty, for that department, as elsewhere published.

2. Students who do not elect Military Drill are forbidden to loiter on the grounds in the presence of the companies; and whenever the drill takes place within the building, all the rooms and halls used by the companies must be vacated by the other students. The Professor of Military Science and Tactics is required to enforce this order.

## CALENDAR.

The Winter term commences on Thursday, January 8, 1880, and continues 12 weeks, closing on Wednesday, March 31.

The Spring term commences on Thursday, April 8, and continues 11 weeks, closing on Wednesday, June 23, (Commencement Day).

The Fall term commences on Thursday, September 16, and continues 14 weeks, closing on Wednesday, December 22.

CATALOGUE OF STUDENTS.

The catalogue that follows includes the names of all students in attendance between November 1st, 1878, and November 1st, 1879. Owing to a recast of the preparatory and college courses, the class standing of the less advanced students has been temporarily affected. It has been deemed best on this account to print, in the present report, the names of the two higher classes only, in a separate list. The names of all other college and preparatory students are printed in alphabetical order—

Name.	Residence.	County.
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GRADUATE IN ARTS.

Noble, Warren F .....	Tiffin .....	Seneca.
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GRADUATES IN SCIENCE.

Humphrey, J. Scott .....	Findlay .....	Hancock.
McMackin, Amasa B .....	Newcomerstown .....	Tuscarawas.
Morrison, Mary Frank .....	Columbus .....	Franklin.
Snyder, Henry, Jr .....	Springfield .....	Clarke.
Towne, Robert S .....	Portsmouth .....	Scioto.

IN POST GRADUATE COURSE.

Howald, Ferdinand S .....	Columbus .....	Franklin.
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CERTIFICATE OF PROFICIENCY IN PHYSICS.

Short, Sidney H .....	Columbus .....	Franklin.
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CLASS OF 1880.

Corwin, Edwin E .....	Columbus .....	Franklin.
Cunningham, Arthur .....	Columbus .....	Franklin.
Gregory, Hiram D .....	Portsmouth .....	Scioto.
Jones, J. Paul .....	Hilliard .....	Franklin.
McCormick, John H .....	Columbus .....	Franklin.
Smith, Florizel .....	Lithopolis .....	Fairfield.
Townsbend, Alice M .....	Avon .....	Lorain.
Ward, John C .....	Willoughby .....	Lake.

CLASS OF 1881.

Baker, Chauncey B .....	Columbus .....	Franklin.
Brown, Christopher N .....	Ironton .....	Lawrence.
Cherryholmes, W. K .....	Millersburg .....	Holmes.
Hyatt, Edward .....	Angusta .....	Carroll.
Jones, Willis S .....	Big Prairie .....	Wayne.
McClung, William E .....	Columbus .....	Franklin.
O'Brine, David .....	Worthington .....	Franklin.
Palmer, Charles O .....	Cleveland .....	Cuyahoga.
Pool, Harwood R .....	New York .....	
Short, Sidney H .....	Columbus .....	Franklin.
Spielman, John A .....	Tiffin .....	Seneca.

## COLLEGE AND PREPARATORY STUDENTS.

Name.	Residence.	County.
Ackerman, Eli O.....	Columbus .....	Franklin.
Ackerman, Fremont .....	Columbus .....	Franklin.
Akin, Park H.....	Columbus .....	Franklin.
Allen, Charles.....	Washington C. H.....	Fayette.
Allen, Frank M.....	Washington C. H.....	Fayette.
Allen, Horace .....	Troy .....	Miami.
Ambos, Peter.....	Columbus .....	Franklin.
Amy, C S .....	Paynes Corner's.....	Trenbull.
Anderson, G. Y .....	Columbus .....	Franklin.
Anderson, James T .....	Columbus .....	Franklin.
Awl, Florence M.....	Columbus .....	Franklin.
Baily, George S.....	Waynesville .....	Warren.
Baird, Lida M .....	Columbus .....	Franklin.
Baker, Duesy H.....	Columbus .....	Franklin.
Baker, Wm. V.....	Thornville.....	Perry.
Barcus, Flora.....	Columbus .....	Franklin.
Barcus, Harry.....	Columbus .....	Franklin.
Bates, Josephine M.....	Irwin .....	Union.
Beebe, Stacey B.....	Coshocton .....	Coshocton.
Beverly, Frank H .....	Columbus .....	Franklin.
Bingham, E. T.....	Columbus .....	Franklin.
Bohrer, James M .....	Baltimore .....	Fairfield.
Bradford, Joseph N.....	Columbus .....	Franklin.
Bradford, Samuel .....	Columbus .....	Franklin.
Britton, Jennie.....	Monroe .....	Butler.
Brooke, Wilson .....	Columbus .....	Franklin.
Brossman Chas. E.....	Lithopolis .....	Fairfield.
Brotherton, William.....	Cedarville .....	Greene.
Broucher Marcus .....	Columbus .....	Franklin.
Brown, William G.....	West Manchester .....	Preble.
Bunn, Walter.....	Chillicothe .....	Itasca.
Burnham, Marion.....	Rosedale .....	Madison.
Burnham, W. D.....	Rosedale .....	Madison.
Butler, Albert C.....	Columbus .....	Franklin.
Campbell, J. R.....	New Harrisburg .....	Carroll.
Carey, Samuel.....	Mt. Vernon .....	Knox.
Clark, Elmer E.....	Orrville .....	Wayne.
Clark, William .....	Mechanicsburg .....	Champaign.
Cooke, Paul.....	Chillicothe .....	Ross.
Collins, Thomas .....	Barneville .....	Belmont.
Conrad, Maria.....	Columbus .....	Franklin.
Coulter, Guy.....	Columbus .....	Franklin.
Courtright, Eugene.....	Lithopolis .....	Fairfield.
Crane, D. W.....	Mainville.....	Warren.
Creighton, W. F.....	Malvern .....	Carroll.
Cresap, R. E. L.....	Logan.....	Hocking.
Crisler, A. Milton.....	West Manchester .....	Preble.
Cunningham, Andrew .....	Columbus .....	Franklin.
Dahl, Harry B.....	Washington .....	Fayette.
Davis, A. E.....	Basll .....	Fairfield.
Davis, Floyd .....	Ithaca, N. Y.....	
Davis, H. S .....	Dayton .....	Montgomery.
Daymude, James A.....	Marble Cliff.....	Franklin.
Dick, Harry B.....	Hopewell P. O.....	Muskingum.
Dickey, Clayton L .....	Central College.....	Franklin.
Deuel, George C.....	Urbana .....	Champaign.
Doe, Charles A.....	Columbus .....	Franklin.
Donaldson, Eli G.....	Columbus .....	Franklin.
Donham, Wm. W.....	Lindale .....	Clermont.
Downer, Edward C.....	Zanesville .....	Muskingum.
Dun, George.....	Dublin .....	Franklin.
Dun, John .....	Dublin .....	Franklin.

## COLLEGE AND PREPARATORY STUDENTS.—Continued.

Name.	Residence.	County.
Dyer, David N.	Galena	Delaware.
Earl, Thomas M.	Columbus	Franklin.
Eastman, J. C.	West Alexandria.	Preble.
Ehler, Frederic	West Alexandria.	Preble.
Ely, William A.	Elyria	Lorain.
Evans, W. H.	Columbus	Franklin.
Falconer, Cyrus, Jr.	Gore	Hocking.
Fassig, Oliver L.	Columbus	Franklin.
Fay, F. William	Columbus	Franklin.
Felch, W. Farrand.	Columbus	Franklin.
Field, Sarah J.	Columbus	Franklin.
Firestone, Nettie	Middle Branch.	Stark.
Fischer, E. R.	Columbus	Franklin.
Fisher, Dudley	Columbus	Franklin.
Fisher, David A.	Kenton	Hardin.
Fitch, Eliza	Columbus	Franklin.
Foster, Jesse K.	Brookville	Montgomery.
Foster, N. P.	Sharonville	Pike.
Fox, Herman S.	Brookville	Montgomery.
Francisco, Bond.	Columbus	Franklin.
Fallington, C. P.	Irwin	Union.
Galbraith, John H.	Columbus	Franklin.
Gibson, Mary	Elyria	Lorain.
Gill, Maggie H.	Hilliard	Franklin.
Glover, Libbie	Hilliard	Franklin.
Glover, Sioux	Hilliard	Franklin.
Good, A. S.	Winchester	Franklin.
Graham, Dora	Clarksburg	Ross.
Graham, Rebecca	Clarksburg	Ross.
Greene, Harry N.	Atwater	Portage.
Green, Clarence C.	Middleport	Meigs.
Griffin, Theodore L.	Columbus	Franklin.
Guinane, Emile F.	Mont Céliard, France	
Haerlio, Herman	Cincinnati	Hamilton.
Hamilton, C. S.	Columbus	Franklin.
Hanitch, Louis	Dayton	Montgomery.
Hanley, R. J.	Columbus	Franklin.
Harrison, Wm. H.	Columbus	Franklin.
Hatch, Lewis M.	Commercial Point.	Pickaway.
Hart, Elmer	Columbus	Franklin.
Hay, John H.	Coshocton	Coshocton.
Hayes, Alvin C.	Burgh Hill	Trumbull.
Hawley, Will E.	Conneaut	Ashtabula.
Hershey Benj. E.	Union	Montgomery.
Higbee, Charles E.	Cleveland	Cuyahoga.
Hine, Adaline	Milan	Erie.
Hine, L. A.	Milan	Erie.
Hinman, Charles D.	Columbus	Franklin.
Hinman, Ella	Columbus	Franklin.
Houder, J. C.	Logan	Hocking.
Hosue, Wm. D.	Columbus	Franklin.
Housel, William D.	Middle Branch.	Stark.
Houston, W. A.	Marysville	Union.
Houston, Margaret E.	Cannonsburg, Pa.	
Howard, Charles J.	Barnesville	Belmont.
Howard, Mary E.	Westerville	Franklin.
Hubbard, Frederick	Columbus	Franklin.
Hubbard, H. M.	Columbus	Franklin.
Hughes, John W.	Columbus	Franklin.
Hull, Alice	Columbus	Franklin.
Huston, Joseph E.	West Alexandria.	Preble.
Hutchinson, Mary	Columbus	Franklin.
Hyatt, Harry	Augusta	Carroll.

## COLLEGE AND PREPARATORY STUDENTS—Continued.

Name.	Residence.	County.
Innis, Adam G .....	Columbus .....	Franklin.
Innis, Isabella .....	Columbus .....	Franklin.
Innis, Louvina .....	Columbus .....	Franklin.
Innis, Sarah G .....	Columbus .....	Franklin.
Jones, James P .....	Big Prairie .....	Wayne.
Jones, Jenette .....	Hilliard .....	Franklin.
Keffer, Frederick .....	Cleveland .....	Cuyahoga.
Keuney, Melvin P .....	Isle St. George .....	Ottawa.
Kenny, Minerva .....	Columbus .....	Franklin.
Keyes, Frank E .....	Columbus .....	Franklin.
Keyser, I. N .....	Columbiana .....	Columbiana.
Kienzle, Frank .....	Columbus .....	Franklin.
King, David C .....	Medina .....	Medina.
Knopf, George .....	Columbus .....	Franklin.
Lakin, Milton C .....	Marble Cliff .....	Franklin.
Lane, Benj. F .....	Ironton .....	Lawrence.
Lane, Louis .....	Mt. Vernon .....	Knox.
Langfitt, Wm. C .....	Millersburg .....	Holmes.
Law, George W .....	Willoughby .....	Lake.
Le Moyne, Madeleine R .....	Chicago, Ills .....	
Le Moyne, Mary .....	Chicago, Ills .....	
Lewis, Charles M .....	Circleville .....	Pickaway.
Lewis, Harry J .....	West Lafayette .....	Coshocton.
Leonhard, L. C .....	Dayton .....	Montgomery.
Lovejoy, Ellis .....	Columbus .....	Franklin.
Lovejoy, Jesse R .....	Columbus .....	Franklin.
Lucas, Mary E .....	West Jefferson .....	Madison.
Martin, Harry .....	Mt. Vernon .....	Knox.
Martin, Walter H .....	Columbus .....	Franklin.
Marvin, Eva .....	Columbus .....	Franklin.
Marvin, Frederick .....	Columbus .....	Franklin.
Mathew, Katherine H .....	Columbus .....	Franklin.
McCoy, Homer W .....	South Point .....	Lawrence.
McDannald, C. E .....	Central College .....	Franklin.
McDonald, Edgar .....	Coshocton .....	Coshocton.
McElroy, T. C .....	Columbus .....	Franklin.
McFarlin, W. K .....	Coitsville .....	Mahoning.
McDowell, John A .....	Columbus .....	Franklin.
McEwen, J. H .....	Wellsville, N. Y .....	
Merion, Charles .....	Columbus .....	Franklin.
Miller, C. C .....	Baltimore .....	Fairfield.
Miller, C. E .....	Middletown .....	Butler.
Miller, Walter M .....	Columbus .....	Franklin.
Miller, W. H .....	McArthur .....	Vinton.
Milligan, J. P .....	Rushville .....	Fairfield.
Mix, Melvin N .....	Avenue .....	Franklin.
Moore, Harry C .....	Columbus .....	Franklin.
Morris, W. D .....	Terre Haute, Ind .....	
Morse, E. L .....	Kingsville .....	Ashtabula.
Morton, G. L .....	South Newberg .....	Geauga.
Morton, James W .....	Mt. Ephraim .....	Noble.
Mosher, George C .....	Findlay .....	Hancock.
Mosher, G. E .....	Chillicothe .....	Ross.
Myers, Noah .....	North Hampton .....	Clarke.
Newlove, W. J .....	Columbus .....	Franklin.
Nichols, J. W .....	Morristown .....	Belmont.
Oberlin, M. W .....	Middle Branch .....	Stark.
O'Brine, David .....	Worthington .....	Franklin.
Orton, Clara G .....	Columbus .....	Franklin.
Orton, Edward, Jr .....	Columbus .....	Franklin.
Packard, William D .....	Warren .....	Trumbull.
Paine, William D .....	Hamden Junction .....	Vinton.
Parker, William .....	Columbus .....	Franklin.

## COLLEGE AND PREPARATORY STUDENTS—Continued.

Name.	Residence.	County.
t, Willis .....	Sunbury .....	Delaware.
, William L .....	Columbus .....	Franklin.
ger, Parker W .....	Columbus .....	Franklin.
harp, Charles .....	Columbus .....	Franklin.
Harwood R .....	New York .....	
oy, William E .....	Delta .....	Fulton.
W. D. ....	Harrisonville .....	Scioto.
William F .....	Pomeroy .....	Meigs.
, Jennie O .....	Marysville .....	Union.
r, Seymour .....	Palestine .....	Pickaway.
son, Carl C .....	Kenton .....	Hardin.
rs, James L .....	Columbus .....	Franklin.
Etta F .....	Canal Winchester .....	Franklin.
r, Albert L .....	Farmersville .....	Montgomery.
W. J. ....	Leon .....	Ashtabula.
, Walter A .....	Columbus .....	Franklin.
, Annie W .....	Richwood .....	Union.
d, Vinton P .....	Chillicothe .....	Ross.
er, D. W. C., Jr .....	Columbus .....	Franklin.
er, Reuben A .....	Columbus .....	Franklin.
over, Mollie .....	Kenton .....	Hardin.
Mary O .....	Columbus .....	Franklin.
, James R .....	Columbus .....	Franklin.
Effie G .....	Columbus .....	Franklin.
A. D. ....	Bartlett .....	Washington.
, Zula M .....	Clintonville .....	Franklin.
, Frederic .....	Columbus .....	Franklin.
, D. Van .....	Lockport, N. Y. ....	
Orin V .....	Rushville .....	Fairfield.
Clinton P .....	Columbus .....	Franklin.
r, Sarah A .....	Louisville .....	Stark.
, Guy .....	Elyria .....	Lorain.
, Lot L., Jr .....	Columbus .....	Franklin.
, Philo C .....	Canton .....	Stark.
, W. A .....	Ada .....	Hardin.
, W. P. ....	Chillicothe .....	Ross.
F. W .....	Jefferson .....	Ashtabula.
eon, Amelia M .....	Clintonville .....	Franklin.
re, C. J .....	Kenton .....	Hardin.
el, J. Turner .....	Columbus .....	Franklin.
an, Charles .....	Columbus .....	Franklin.
ll, D. S .....	Georgetown .....	Brown.
x, Theodore .....	Cedarville .....	Greene.
r, Edmond J .....	Columbus .....	Franklin.
r, Frank .....	Columbus .....	Franklin.
Harry K .....	Columbus .....	Franklin.
kill, George H .....	Shadysville .....	Franklin.
ton, Azor .....	Grand Rapids .....	Wood.
lle, W. E .....	Celina .....	Mercer.
Harry L .....	Marion .....	Marion.
rbung, C. R .....	Columbus .....	Franklin.
arlengen, E. M .....	Columbus .....	Franklin.
Veit .....	Columbus .....	Franklin.
ell, Frederic J .....	Racine .....	Meigs.
, Julia F .....	Columbus .....	Franklin.
, William .....	Columbus .....	Franklin.
Lemuel N .....	Panola, Illinois .....	
er, Cora .....	Chillicothe .....	Ross.
, J. J. ....	Ironton .....	Lawrence.
ns, James W .....	Barnesville .....	Belmont.
all, Lafayette .....	Covington .....	Miami.
oy, Charles .....	Pomeroy .....	Meigs.



## COLLEGE AND PREPARATORY STUDENTS—Continued.

Name.	Residence.	County.
Whitten, William .....	Columbus .....	Franklin.
Wikoff, John B .....	Columbus .....	Franklin.
Wilcox, James B .....	Columbus .....	Franklin.
Wilfing, C. J .....	Greenville .....	Darke.
Wilgus, Horace L .....	Conover .....	Miami.
Wilgus, Lewis F .....	Conover .....	Miami.
Wilkinson, E. W .....	Colambus .....	Franklin.
Willard, C. P .....	Columbus .....	Franklin.
Williams, Harley .....	Columbus .....	Franklin.
Wilson, Josiah D .....	Clarksburg, W. Va .....	
Wilson, Stonewall Jackson .....	Clarksburg, W. Va .....	
Wing, C. M .....	Newark .....	Licking.
Wirth, Herman .....	Columbus .....	Franklin.
Wood, J. G .....	Columbus .....	Franklin.
Wood, K. D .....	Columbus .....	Franklin.
Wright, Charles H .....	Athens .....	Athens.
Young, Willis E .....	Richwood .....	Union.
Zuniga, Manuel .....	Guadalajara, Mexico .....	

## TREASURER'S REPORT.

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COLUMBUS, OHIO, Nov. 14, 1879.

*Hon. T. J. GODFREY, Chairman of the Board of Trustees of the Ohio State University :*

DEAR SIR: I have the pleasure to hand you herewith my ninth annual report of the financial transactions of the Ohio State University for the fiscal year closing the 15th inst. This report embraces, among other things,

I. A general cash statement, showing the receipts, expenditures and balances of cash.

II. The cash transactions incident to the sale of the Virginia Military Lands from 1871 to date.

III. A statement showing the condition of the endowment fund held by the State of Ohio, and pledged to the support and maintenance of the Ohio State University.

IV. A full statement of the cash received from whatever source into the treasurer's hands.

V. A detailed account of the disbursements made during the year. All of which are respectfully submitted.

HENRY S. BABBITT, *Treasurer.*

## STATEMENT I.

A GENERAL STATEMENT OF CASH ACCOUNTS FOR THE FISCAL YEAR ENDING NOVEMBER  
15, 1879.HENRY S. BABBITT, *Treasurer, in account with the Ohio State University :*

Dr.

Nov. 16, 1878.	To balance of cash on hand.....	\$1,952 29
	To cash from various sources, viz:	
	From State treasury on account of the	
	income of the Endowment Fund,	
	balance due, accrued in 1878.....	\$13,775 81
	On account of \$32,842 due from same	
	source in 1879 .....	16,421 00
		<hr/> \$30,196 81
	From students' term bills:	
	Winter term, 1878-9.....	\$1,083 00
	Spring term, 1879 .....	1,246 00
	Fall term, 1879 .....	1,205 50
		<hr/> 3,534 50
	From rent of houses:	
	President Orton .....	\$350 00
	Professor Townshend.....	300 00
	Professor Mathew .....	199 97
		<hr/> 849 97
	From proceeds of notes received for	
	sale of Virginia Military lands....	\$2,301 73
	From interest on such notes .....	510 87
	For Virginia Military land sales. ....	2,467 40
		<hr/> 5,280 00
	From miscellaneous sources, to wit:	
	Attorney-General, collections on sub-	
	scription for location of College...	\$311 60
	Professor Norton, materials sold stu-	
	dents .....	165 85
	Professor Robinson, materials paid	
	for by students.....	10 95
	C. E. Thorne, farmer, coal sold.....	8 25
	Thompson & Dowdall, insurance pol-	
	icy cancelled.....	24 00
	Franklin National Bank, interest on	
	deposits in full .....	12 84
		<hr/> 532 89
		<hr/>
	Total receipts during the year .....	40,394 17
		<hr/>
	Total receipts, including above balance .....	\$42,376 46

## CONTRA, Cr.

<b>Nov. 15, 1879. By expenditures as follows (see the detailed statement for items.)</b>	
For support and maintenance of the University, viz :	
Salaries of faculty, teachers, and other officials.	\$25,267 50
Expenses of trustees.....	898 15
Fire insurance .....	461 00
Other current expenses .....	2,795 65
	<u>\$29,422 30</u>
For furniture and apparatus not included in department supplies .....	457 77
For library .....	677 22
For farm expenses .....	\$695 77
For improvements .....	1,623 79
For repairs .....	966 63
	<u>3,286 19</u>
For University band .....	100 00
For department supplies .....	2,318 20
For expenses Virginia Military lands .....	1,127 86
	<u>\$37,389 54</u>
Total disbursements for the year .....	\$37,389 54
Balance of cash on hand .....	4,986 92

## STATEMENT II.

## VIRGINIA MILITARY LAND SALES.

The cash receipts into the treasury from the proceeds of the sales of these lands, as reported to November 15, 1878, were .....		\$18,859 37
Receipts during fiscal year 1879 .....		5,280 00
		<u>\$24,139 37</u>
Total receipts to November 15, 1879 .....		\$24,139 37
Total expenses on this account to November 15, 1878, as per report for last year .....		\$10,938 23
Expenses in 1879 .....		1,127 86
		<u>12,066 09</u>
Total expenses to November 15, 1879 .....		12,066 09
Balance, showing net receipts to date .....		\$12,073 28

## STATEMENT III.

SHOWING THE AMOUNT OF THE OHIO STATE UNIVERSITY ENDOWMENT FUND, COMPUTED IN ACCORDANCE WITH THE PROVISIONS OF THE ACT PASSED FEBRUARY 10, 1871. (O. L., vol. 67, page 15.)

Amount of fund as principal, January 1, 1879 .....	\$506,031 14
Add six months' interest on same to July 1, 1879, at 6 per cent. per annum .....	\$15,180 93
Add interest on \$34,500 of Franklin County Agricultural bonds to March 15, 1879 .....	\$1,207 50
Add interest on last amount to July 1, 1879 .....	21 13
	<u>1,228 63</u>
Total additions first half year .....	16,409 56
Making .....	<u>\$522,440 70</u>

From which sum is to be deducted payments made by the State from income of the fund since last report, as follows :

Nov. 27, 1878—\$2,000.00, with interest to July 1, 1879, 7 mos. 3 days	\$71 00
Dec. 17, 1878— 3,000.00                   “                   “                   6 “                   13 “	96 50
Feb. 22, 1879— 3,000.00                   “                   “                   4 “                   8 “	64 00
Mar. 14, 1879— 3,000.00                   “                   “                   3 “                   16 “	53 00
Mar. 28, 1879— 2,775.81                   “                   “                   3 “                   2 “	42 46
June 2, 1879— 3,000.00                   “                   “                                   28 “	14 00
June 16, 1879— 3,000.00                   “                   “                                   14 “	7 00
<u>\$19,775.81</u>	<u>\$347 96</u>

Total deductions first half year ..... \$20,123 77

Leaving amount of new principal July 1, 1879 ..... \$502,316 93

Add interest on that sum to January 1, 1880 ..... \$15,069 51

Add interest on Franklin county bonds as above, coupons falling due September 15, 1879\* ..... \$1,067 50

And interest on last amount to Jan. 1, 1880 ..... 18 63

1,086 18

Total additions second half year ..... 16,155 69

Making ..... \$518,472 62

From which is to be deducted the following payments :

Aug. 25, 1879—\$3,000, with interest to Jan. 1, 1880, 4 mos. 5 days..	\$62 50
Oct. 20, 1879— 1,421                   “                   “                   3 “                   10 “ ..	23 68
Nov. 5, 1879— 3,000                   “                   “                   1 mo. 25 “ ..	27 50
Nov. 12, 1879— 3,000                   “                   “                   1 “                   18 “ ..	24 00
<u>\$10,421</u>	<u>\$137 68</u>

Total deduction second half year ..... 10,558 68

Leaving amount of fund derived from proceeds of sale of land scrip and accumulations thereto till January 1, 1880 ..... \$507,913 94

Upon this sum interest at the rate of six per cent. per annum, compounded semi-annually, is payable, under the provisions of the act passed May 1, 1873 (O. L., vol. 75, page 126), to the Ohio State University. Besides this, a deposit made with the Treasurer of State by the Trustees of the Ohio Agricultural and Mechanical College, complying with provisions of an act passed January 20, 1871, of the seven per cent. bonds of Franklin county, amounts to\* ..... 34,500 00

Making an aggregate fund, held in trust by the State for the University, of ..... \$542,413 94

Interest upon the above sums, computed upon the same terms, for 1880, will amount to ..... 32,890 00

\* Four thousand dollars of the Franklin county bonds matured March 15, 1879, and ten thousand dollars September 15, 1879, but for some reason no adequate provision was made by the county commissioners for their redemption. The interest for September 15 is therefore short the sum of \$140.00. The remainder of the bonds mature next year, to wit: ten thousand dollars on March 15, 1880, and ten thousand five hundred dollars on September 15, 1880. The treasurer of the county, P. W. Corzilius, Esq., informs me that interest will be paid in full to the date of the final redemption of the bonds. After the bonds are paid in full, the proceeds will remain in the State Treasury, and constitute a part of the irreducible debt to the University.

Requisitions were made and warrants were issued upon the State Treasury during the fiscal year 1879, as above shown, to the amount of.....	\$30,196 81
This sum includes a portion of the interest accrued and subject to draft in 1878, but not drawn until after the close of the fiscal year 1878, amounting to .....	13,775 81
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Making the amount received by the Treasurer of the University upon the appropriation of \$32,842, for interest on the irreducible debt of the State in 1879, one-half the amount due, or .....	\$16,421 00
And leaving still subject to draft, if required by the University, and if drawn out prior to January 1, 1880, the further sum of.....	16,421 00
<hr/>	
	\$32,842 00

The act of February 10, 1870, requires the calculations of interest to be made by semi-annual rests, on the first of January and July of each year, but the fiscal year of the State and of the University ends on the 15th of November, and the accounts are all settled at that date. It is held by the Attorney-General that the balances of appropriations undrawn on the first of January and July annually, revert to the parent fund, as part of the principal, which can not be diminished except by special legislation.

## APPROPRIATIONS.

The following appropriations and authorized expenditures of the funds of the University have been made by the Board of Trustees for the fiscal year 1879:

Nov. 9, 1878—The income of the Endowment Fund, so called, for the support and maintenance of the University, viz.....	\$32,842 00
“ “ For teaching assistance .....	400 00
“ “ Materials for dissecting in the Zoological Department .....	40 00
“ “ Pathological Cabinet.....	125 00
“ “ Supplies for Chemical Laboratory.....	100 00
Jan. 7, 1879—Supplies for Physical and Mechanical Laboratory.....	50 00
“ “ Musical instruments .....	50 00
“ 9, “ Supplies for Chemical Department.....	200 00
“ “ Farm Committee's use .....	500 00
Apl. 15, “ Assistant teachers, 3d term .....	30 00
“ “ Books, etc., by President Orton.....	35 00
“ “ Supplies for Mechanical Department.....	20 00
June 16, “ Student helps—Latin and Greek.....	\$225
Physics .....	200
Zoölogy .....	125
Geology .....	150
<hr/>	
	700 00

June 16, 1879—Supplies for Library .....	\$100	
Mining Department .....	150	
Drawing     " .....	50	
Zoölogical   " .. .....	75	
	—	375 00
“ 18, “     University band .....		50 00
“     “     High street improvement .....		400 00

The unexpended balances of former appropriations have been cancelled by resolution of the Board.

STATEMENT IV.

SHOWING IN DETAIL THE CASH RECEIPTS FROM ALL SOURCES DURING THE YEAR  
ENDING NOVEMBER 15, 1879, BY HENRY S. RABBITT, TREASURER.

Date.	From whom received, and on what account.	Amount.
1878.		
Nov. 16	Balance of cash on hand .....	\$1,982 29
27	State Treasury, income of endowment .....	2,000 00
Dec. 13	Professor Mathew, house rent .....	16 66
13	C. A. Barton, Agent of Ohio State University, Virginia Military land sales .....	85 90
13	J. M. King, Virginia Military land note, \$10; interest, \$1.15.....	11 15
16	State Treasury, income of endowment .....	3,000 00
16	C. A. Barton, Agent, Virginia Military land sales .....	1,688 00
19	G. W. Hackworth, Virginia Military land note, \$200; interest, \$10.	210 00
31	President Orton, house rent .....	70 00
31	same           laboratory fees received .....	7 00
1879.		
Jan. 18	C. A. Barton, Agent, Virginia Military land sales .....	180 65
18	S. A. Hoffer, Virginia Military land note .....	25 00
18	A. M. King,     "     "     "     "     \$50; interest, \$2.90.....	52 90
18	Professor Mathew, house rent .....	16 66
18	Students' term bills .....	1,021 00
19	Franklin National Bank, interest on deposits, in full .....	12 84
20	W. P. Hazen, Virginia Military land notes, \$310; interest, \$33.58..	343 58
27	W. H. Taylor, Virginia Military land note, \$39; interest, \$2.24 ....	41 24
Feb. 22	Professor Mathew, house rent .....	16 66
22	Students' term bills .....	55 00
22	State Treasury, income of endowment .....	3,000 00
Mar. 4	J. F. Miles, Virginia Military land notes, \$90.75; interest, \$0.95....	91 70
14	F. Whitten, on account of Virginia Military land note .....	10 00
15	State Treasury, income or endowment .....	3,000 00
15	R. P. L. Baber, for Attorney General, net proceeds of collection on account of Samuel Doyle's subscription to the location of the College .....	311 00
15	Professor Mathew, house rent .....	16 67
25	President Orton,     " .....	105 00
25	E. Simpson, Virginia Military land, interest .....	12 18
28	State Treasury, income of endowment .....	2,775 81
April 5	Students' term bills .....	92 00
5	Professor Mathew, house rent .....	16 66
5	J. F. Miller, Virginia land, interest .....	12 50
12	Students' term bills .....	853 00
May 12	Professor Mathew, house rent .....	16 67
12	Students' term bills .....	180 00
12	M. Hart, Virginia Military land, interest .....	8 80
12	Professor Robinson, damages in laboratory .....	7 45

## STATEMENT IV.—Continued.

Date.	From whom received, and on what account.	Amount.
1879.		
June 2	State Treasury, income of endowment .....	\$3,000 00
14	Asenath Watson, Virginia Military land note and interest .....	235 68
14	J. F. Miles, three Virginia land notes, \$43.03; interest, \$1.22 .....	44 30
14	Professor Mathew, house rent .....	33 32
18	State Treasury, income of endowment .....	3,000 00
30	Students' term bills .....	91 00
30	President Orton, house rent .....	105 00
30	C. A. Barton, Agent, Virginia Military land sales .....	479 10
30	Cuppett & Webb, on account, Virginia Military land notes .....	100 00
30	J. F. Miles, three Virginia Military land notes, \$137.61; interest, \$4 27 .....	141 91
30	G. W. Hopper, Virginia Military land note .....	10 00
30	W. S. Hall, Virginia Military land note, \$26; interest, \$7.90 .....	33 90
30	J. B. McGrew, Virginia Military land note .....	3 75
July 2	Prof. S. A. Norton, apparatus sold .....	165 85
2	Professor Townshend, house rent, one year .....	300 00
2	J. Lawhorn, Virginia Military land note, \$34; interest, \$3 65 .....	37 65
10	C. E. Thorne, coal sold .....	8 25
16	W. J. Easter, Virginia Military land note, \$34.40; interest, \$2 30 .....	40 70
Aug. 14	Anthony Welch, Virginia Military land note, \$63 40; interest, \$3.37 .....	66 77
21	J. F. Miles, three Virginia Military land notes, \$25.62; interest, \$0.93 .....	26 55
21	J. F. Miles, three Virginia Military land notes, \$34.05; interest, \$1.25 .....	35 30
21	J. W. Davis, Virginia Military land note, \$30; interest, \$5.85 .....	35 85
21	B. M. Renee, Virginia Military land notes, \$26.60; interest, \$1 75 .....	28 35
21	D. Bungardner, Virginia Military land note .....	20 00
21	S. A. Hoffer, Virginia Military land note, \$5.00; interest, \$2 95 .....	7 95
25	State Treasury, income of endowment .....	3,000 00
28	Thompson & Dowdall, insurance policy canceled .....	24 00
28	A. Welch, Virginia Military land note, \$63.43; interest, \$3.97 .....	67 40
28	J. F. Miller, on account of Virginia Military land note .....	27 00
Sept. 8	M. P. Thompson, Virginia Military note, \$50; interest, \$2.90 .....	52 90
13	E. A. Legg, on account of Virginia Military land note .....	40 00
15	David Evans, Virginia Military land note, \$16.00; interest, \$0.92 .....	16 92
27	Professor Mathew, house rent .....	50 00
Oct. 8	Andrew Behene, Jr., Virginia Military land note, \$101 82; interest, \$14 03 .....	149 85
8	Thomas Brown, Virginia Military land note, \$20; interest, \$1 20 .....	21 20
20	Bettie Allen, Virginia Military land sale .....	33 75
20	C. A. Barton, Virginia Military land note .....	50 00
20	J. G. Freeman, balance on Virginia Military land note .....	17 00
20	same interest on Virginia Military land notes .....	16 42
20	State Treasury, income of endowment .....	1,421 00
21	Cuppett & Webb, balance on Virginia Military land notes .....	337 15
21	same interest in full on Virginia Military land notes .....	239 35
21	W. M. Stephenson, Virginia Military land note, \$4; interest, \$0 25 .....	4 25
Nov. 5	State Treasury, income of endowment .....	3,000 00
6	Students' term bills .....	1,205 50
6	Professor Robinson, received for damages .....	3 50
6	Samuel W. Brown, Virginia Military land note, \$10; interest, \$0.60 .....	10 60
7	Mary J. Reed, Virginia Military land note, \$3.21; interest, \$11.79 .....	20 00
7	John Liston, Virginia Military land notes, \$21.25; interest, \$33.60 .....	54 85
7	Professor Mathew, house rent .....	16 67
14	State Treasury, income of endowment .....	3,000 00
14	President Orton, house rent .....	70 00
Total receipts during fiscal year 1879, including balance of \$1,952.29 on hand November 16, 1878 .....		\$42,376 46
Total disbursements for same period (see following statement in detail) .....		37,38 54
Balance of cash on hand November 15, 1879 .....		\$4,986 92



STATEMENT V.

A DETAILED ACCOUNT OF DISBURSEMENTS, BY HENRY S. BABBITT, TREASURER, DURING THE FISCAL YEAR ENDING NOV. 15, 1879.

Date.	No. of order.	To whom paid.	For what purpose.	From what appropriation.	Amount.
1878					
Nov. 16	1	Sidney A. Norton	Hardware, etc	Current expenses	\$35 80
16	2	same	Apparatus and chemicals	Department supplies	301 81
16	3	Patrick Fitzsimmons	Hauling	Current expenses	1 50
16	4	L. D. Hagerty	Ohio Short Horn Record	Library	2 64
18	5	Hornmle & Hohn	Three models with pulleys	Department supplies	55 00
18	6	J. H. Anderson & Co	Two Short Horn cattle	Farm expenses	130 82
18	7	same	Letter heads and envelopes	Current expenses	55 00
18	8	same	Expenses attending cattle sale, etc	Farm expenses	6 00
18	9	same	Glazing boarding house	Repairs	6 25
21	10	Hahn, Bellows & Butler	Two tables and blocks	Department supplies	123 00
22	11	Columbus Transfer Co	Drayage on boxes	Current expenses	2 11
27	12	President Edward Orton	Salary for November	Salaries	275 00
27	13	Prof. Sidney A. Norton	"	"	225 00
27	14	Prof. Joseph Millikin	"	"	225 00
27	15	Prof. N. S. Townshend	"	"	225 00
27	16	Prof. R. W. McFarland	"	"	225 00
27	17	Prof. Albert H. Tuttle	"	"	225 00
27	18	Prof. John A. Church	"	"	225 00
27	19	Prof. Josiah R. Smith	"	"	150 00
27	20	Prof. Thomas Mathew	"	"	85 00
27	24	Prof. Luigi Lomia	"	"	50 00
27	22	Miss Alice Williams	"	"	55 00
27	23	Prof. S. W. Robinson	"	"	225 00
27	24	T. J. Godfrey	Expenses as trustee	Current expenses	15 80
29	25	James B. Jamison	"	"	17 45
30	26	N. S. Townshend	"Flora of Brazil"	Library	32 40
Dec. 2	27	J. T. Harris	Ventilators, etc	Apparatus	190 00
5	28	Andrew Schwarz	Plumbing work	Repairs	9 25
5	29	M. Dillon	Salary as janitor	Salaries	60 00
7	30	Columbus Transfer Co	Freight on chemicals	Current expenses	4 05
7	31	Thomas Mathew	Drawing materials	Department supplies	32 00
7	32	S. W. Robinson	Painting models	"	6 75

Dec.	10	Isaac B. Potts	Heating apparatus	Repairs	17 73
	12	Edward Orton	Library books	Library	101 76
	12	same	Sundries	Current expenses	26 64
	13	L. G. Thrall & Son	Printing and binding stationery	"	27 75
	17	John A. Church	Salary for December	Salaries	225 00
	17	Joseph Millikin	"	"	225 00
	14	Columbus Transfer Co	Drayage	Current expenses	75
	14	W. A. Shoemaker	Coal	"	174 49
	17	Edward Orton	Salary for December	Salaries	275 00
	17	Sidney A. Norton	"	"	225 00
	17	N. S. Townshend	"	"	225 00
	17	R. W. McFarland	"	"	225 00
	17	A. H. Tuttle	"	"	225 00
	17	Luigi Lomia	Salary to January 1	"	100 00
	17	S. W. Robinson	" for December	"	225 00
	17	J. R. Smith	"	"	150 00
	17	Thomas Mathew	"	"	85 00
	17	Alice Williams	"	"	55 00
	17	M. Dillon	"	"	60 00
	17	Adams Express Co	Express on notes	Virginia Military land	3 70
	17	Miss M. F. Morrison	Salary as assistant librarian	Salaries	25 00
	17	Arthur Cunningham	Assistant in classical department	"	100 00
	17	S. B. Beebe	" mathematical department	"	50 00
	17	Sidney H. Short	Services in phy. laboratory	"	25 00
	17	Nat. W. Lord	Salary December and half of November	"	75 00
	17	Vincent, Sturm & Barston	Secretary's desk	Current expenses	95 25
	17	H. Snyder, H. McCoy, and H. B. Dahl	Laboratory, fees refunded	"	30 00
	24	S. E. Samuel	Chemicals	"	10 00
	24	Field & Fletcher	Driving well, and fixtures	Improvement	53 14
	24	J. Keely	Plastering	Repairs	20 75
	26	Vincent, Sturm & Barston	Freight on desk	Current expenses	1 32
	26	S. H. Short	Phy. laboratory supplies	Department supplies	14 97
	28	George W. Weinman	Repairs to pump	Repairs	30 00
18'9					
Jan.	7	Kilbourne, Jones & Co	Hardware	"	18 60
	8	Chas. A. Barton	Salary and expenses	Virginia Military land	267 10
	8	Royce & Pulling	Repairs to dumb waiter	Repairs	4 25
	9	A. D. Rodgers, P. M	Postage	Current expenses	43 96
	8	Comly & Francisco	Printing cards	"	1 50
	10	Alston Ellis	Expenses of attending meeting of B'd	"	20 75
	10	T. J. Godfrey	"	"	22 60
	10	T. Ewing Miller	Use of chariot for Finance committee	"	5 00

DETAILED STATEMENT OF PAYMENTS MADE, ETC.—Continued.

Date.	Order.	To whom paid.	For what purpose.	From what appropriation.	Amount.
1879					
Jan. 10	74	Stephen Johnston	Expenses as trustee	Current expenses	\$12 00
11	75	Ralph Leete	Legal services, and exp's in attending Cooper & McKinny suits	Virginia Military land	172 30
11	76	Wm. H. Leete	Legal services	"	125 00
11	77	H. S. Babbitt	Salary	Salaries	50 00
11	78	John A. Church	Books for library	Library	57 26
13	79	S. E. Samuel	Alcohol	Current expenses	9 69
14	80	James B. Jamison	Expenses as trustee	"	29 00
14	81	S. H. Ellis	"	"	14 60
14	82	same	"	"	27 85
15	83	same	Farm appropriation	Farm expenses	350 00
17	84	Wassall Fire Clay Co	Repairing gas retorts, etc	Repairs	8 15
18	85	Columbus Transfer Co	Freight on cartridges and stone	Contingent expenses	7 86
20	86	John O'Neil	Four days' work	"	5 00
20	87	Geo. W. Dunn	Musical instruments	Special expenses	50 00
22	88	J. S. Doe	Coal	Contingent expenses	60 10
22	89	Attlesay Lithographing Printing Works.	Printing letter-heads and envelopes	"	18 00
22	90	Edward Orton	Salary for January	Salaries	275 00
23	91	L. G. Thrall & Son	Printing and binding bill-heads	Current expenses	6 50
23	92	Cott & Haun	Printing letter-heads and book labels.	"	5 50
25	93	Albert Allen	Salary as secretary	Salaries	100 00
25	94	Albert H. Tuttle	" for January	"	225 00
28	95	Sidney A. Norton	"	"	225 00
28	96	Joseph Millikin	"	"	225 00
28	97	R. W. McFarland	"	"	225 00
28	98	Norton S. Townshend	"	"	225 00
28	99	Luigi Lomia	"	"	50 00
28	100	S. W. Robinson	"	"	225 00
28	101	John A. Church	"	"	225 00
28	102	Josiah R. Smith	"	"	150 00
28	103	Thomas Mathew	"	"	85 00
28	104	Alice Williams	"	"	55 00
29	105	M. Dillon	"	"	60 00
30	106	N. W. Lord	"	"	50 00

Feb	4	107	T. J. Godfrey.....	Necessary expenses .....	Current expenses .....	16 75
	4	108	Stephen Johnston .....	" .....	" .....	9 00
	5	109	A Ward .....	Coal.....	" .....	238 84
Jan.	7	110	P. Hess .....	Conveyance of Legislative committee..	" .....	10 00
Feb.	6	111	William Halley.....	Plumbing repairs .....	Repairs.....	48 90
	7	112	Henry McElwin .....	Blackboard repairs.....	" .....	25 00
	8	113	Ohio Furniture Company .....	Cases and table.....	Departments.....	39 00
	10	114	Hope Machine Works .....	Repairing machinery.....	Repairs.....	6 20
	11	115	Conly, Francisco & Co .....	Paper to cover report .....	Current expenses .....	5 60
	14	116	James B. Jamison .....	Expenses as Trustee.....	" .....	15 55
	15	117	Board of Trustees .....	Expenses in visiting Illinois .....	" .....	309 00
	18	118	Leader Printing Co.....	125 copies of "Leader" .....	" .....	3 75
	20	119	George H. Twiss .....	Galvanic battery.....	Departments.....	40 00
	20	120	N. H. Edgerton.....	Philosophical instruments.....	" .....	4 92
	28	121	Edward Orton.....	Salary for February.....	Salaries .....	275 00
	28	122	Sidney A. Norton .....	" .....	" .....	225 00
	28	123	Joseph Millikin.....	" .....	" .....	225 00
	28	124	Norton S. Townshend.....	" .....	" .....	225 00
	28	125	R. W. McFarland.....	" .....	" .....	225 00
	28	126	Albert H. Tuttle .....	" .....	" .....	225 00
	28	127	Luigi Lomia .....	" .....	" .....	50 00
	28	128	S. W. Robinson .....	" .....	" .....	225 00
	28	129	John A. Church .....	" .....	" .....	235 00
	28	130	Josiah R. Smith .....	" .....	" .....	150 00
	28	131	Thomas Mathew .....	" .....	" .....	85 00
	28	132	Alice Williams .....	" .....	" .....	55 00
	28	133	N. W. Lord.....	" .....	" .....	50 00
	28	134	M. Dillon .....	" .....	" .....	60 00
March	4	135	Edward Orton.....	Sundries.....	Current expenses .....	37 40
	4	136	same .....	Department supplies .....	Department supplies .....	4 95
	4	137	H. L. Shepherd.....	Binding reports, etc.....	Current expenses.....	7 50
	4	138	Aston & Huff .....	Repairing stoves.....	Repairs.....	16 75
	4	139	Miller, Green & Joyce .....	Supplies for military.....	Departments.....	17 88
	7	140	Hope Machine Company .....	Work on castings .....	Repairs .....	8 40
	8	141	Thomas Vaughn .....	Drayage and expressage.....	Current expenses .....	6 40
	8	142	Thomas Mathew .....	Crayons, etc., for drawing department..	Departments.....	15 00
	8	143	A. H. Tuttle.....	Supplies for dissecting room.....	" .....	14 15
	8	144	Joseph Dixon .....	1,500 brick for repairs.....	Repairs .....	6 75
	11	145	Edward Orton.....	Barrel of blue vitriol.....	Departments.....	25 06
	11	146	Chas. E. Thorue .....	Farm expenses.....	Farm .....	150 00
	11	147	T. Longstreth .....	Coal.....	Current expenses .....	18 00
	12	148	J. S. Doe & Co.....	Coal.....	" .....	205 00

DETAILED STATEMENT OF PAYMENTS MADE, ETC.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	From what appropriation.	Amount.
1879. March 12	149	H. T. Chittenden	Carpenter work	Repairs	\$4 37
15	150	Aston & Huff	Ventilating pipes	Apparatus	23 20
15	151	John A. Spielman	Guarding building	Current expenses	9 00
20	152	William Taylor	Cement, etc.	Repairs	6 61
19	153	John A. Church	Salary for March	Salaries	225 00
20	154	James B. Jamison	Expenses as Trustee	Current expenses	13 50
21	155	Edward Orton	Salary for March	Salaries	275 00
22	156	Isaac Eberly	Barrel of vitriol	Current expenses	9 00
26	157	Sidney A. Norton	Salary for March	Salaries	225 00
26	158	Joseph Millikin	"	"	225 00
27	159	Norton S. Townshend	"	"	225 00
27	160	R. W. McFarland	"	"	225 00
26	161	Albert H. Tuttle	"	"	225 00
25	162	Luigi Lomia	"	"	100 00
25	163	S. W. Robinson	"	"	225 00
26	164	J. R. Smith	"	"	150 00
27	165	Thomas Mathew	"	"	85 00
27	166	Alice Williams	"	"	55 00
1	167	N. W. Lord	"	"	50 00
April 7	168	M. Dillon	"	"	60 00
March 24	169	Edward Fleming	Work on cistern	Repairs	5 00
24	170	Edward Hughes	"	"	31 50
25	171	Mary F. Morrison	Salary as librarian	Salaries	37 50
25	172	Edward Orton	For assistant teachers	"	235 00
26	173	Thomas Vaughn	Freight and drayage	Current expenses	2 70
28	174	W. A. Gill	Insurance policy	"	30 00
29	175	James B. Jamison	Expenses as Trustee	"	12 00
April 4	176	Hayden & Baker	Castings, etc., for Mechanical dep't	Departments	13 88
4	177	Scioto Boiler Works	Repairs	Repairs	14 50
4	178	John A. Church	Books	Library	113 47
4	179	same	Mining department supplies	Department supplies	28 53
5	180	Geo. M. Maris & Co	Hardware	Repairs	19 28
5	181	Isaac B. Potts	Brass work	"	17 66
10	182	Columbus Transfer Co	Freight and drayage	Current expenses	3 11

12	123	A. H. Tuttle.....	Material for dissection .....	Departments .....	6 70
12	184	Sidney A. Norton.....	Chemical supplies.....	Department supplies .....	120 74
16	185	S. H. Ellis .....	Expenses as Trustee .....	Current expenses .....	22 60
17	186	T. J. Godfrey.....	" .....	" .....	40 50
18	187	Stephen Johnston .....	" .....	" .....	14 75
19	188	Eureka Fire Hose Co.....	Cotton fire hose.....	Apparatus .....	244 57
23	189	L. G. Thrall & Co .....	Receipts for Prof. McFarland .....	Current expenses .....	9 50
23	190	Albert Allen.....	Salary as Secretary.....	Salaries.....	100 00
30	191	Edward Orton .....	Salary for April.....	" .....	275 00
30	192	Sidney A. Norton .....	" .....	" .....	225 00
30	193	Joseph Millikin .....	" .....	" .....	225 00
30	194	N. S. Townshend .....	" .....	" .....	225 00
30	195	R. W. McFarland .....	" .....	" .....	225 00
30	196	Albert H. Tuttle.....	" .....	" .....	225 00
30	197	Luigi Lomia .....	" .....	" .....	50 00
30	198	S. W. Robinson.....	" .....	" .....	225 00
30	199	John A. Church .....	" .....	" .....	225 00
30	200	J. R. Smith.....	" .....	" .....	150 00
30	201	Thos. Mathew .....	" .....	" .....	85 00
30	202	Alice Williams .....	" .....	" .....	55 00
30	203	Nat. W. Lord .....	" .....	" .....	50 00
30	204	M. Dillon.....	" .....	" .....	60 00
30	205	R. W. McFarland.....	Services as bursar.....	" .....	25 00
30	206	H. Bancroft .....	Insurance premium .....	Current expenses .....	57 00
1	207	Thos. Vaughn .....	Freight.....	" .....	6 15
2	208	Nevins & Myers .....	Programmes of lectures .....	" .....	15 00
6	209	Mrs. Thos. McDonald .....	5 days' work.....	" .....	11 75
6	210	Hoermle & Hohn .....	Steel pinion .....	Department supplies .....	3 50
7	211	John Kelly .....	Repairing smoke stack .....	Repairs.....	12 15
7	212	Mrs. Ed. Hughes.....	" arches for boiler .....	" .....	18 80
8	213	J. M. & W. Westwater.....	Jars, pipes, etc.....	Department supplies .....	47 25
8	214	A. H. Tuttle.....	Section cutter.....	" .....	20 40
8	215	S. A. Norton.....	Chemicals and apparatus .....	" .....	71 03
9	216	E. B. Armstrong .....	Repairs of roof.....	Repairs .....	6 50
10	217	Andrew Schwarz .....	Plumbing.....	" .....	47 26
10	218	John A. Church .....	Books .....	Library.....	25 90
23	219	Halm, Bellows & Butler .....	Desk .....	Department supplies .....	45 00
24	220	Nevins & Myers .....	Stationery, etc.....	Current expenses .....	41 90
24	221	Albert Tuttle.....	Salary for May.....	Salaries.....	225 00
26	222	Thompson & Dowdall .....	Premium on insurance .....	Current expenses .....	35 00
28	223	Edward Orton.....	Salary for May.....	Salaries .....	275 00
28	224	Sidney A. Norton .....	" .....	" .....	225 00

May

DETAILED STATEMENT OF PAYMENTS MADE, ETC.—Continued.

Date.	Order No.	To whom paid.	For what purpose.	From what appropriation.	Amount.
1879.					
May	25	Joseph Millikin	Salary for May	Salaries	\$225 00
26	225	Norton S. Townshead	"	"	225 00
28	226	R. W. McFarland	"	"	225 00
28	227	Luigi Lomia	"	"	50 00
28	228	S. W. Robinson	"	"	225 00
28	229	John A. Church	"	"	225 00
28	230	Josiah R. Smith	"	"	150 00
28	231	Thomas Mathew	"	"	85 00
28	232	Alice Williams	"	"	55 00
28	233	N. W. Lord	"	"	50 00
28	234	M. Dillon	"	"	60 00
28	235	Miss M. F. Morrison	Salary to end of June	"	37 50
June	4	Stephen Johnston	Expenses as trustee	Current expenses	10 25
5	236	Thomas J. Godfrey	"	"	17 40
6	237	J. S. Doe & Co	Coal	"	48 20
6	238	G. W. Weinman	Repairs to steam-pump	Repairs	60 15
6	239	John A. Church	Mining department supplies	Department supplies	19 90
7	240	William Halley	Plumbing work	Repairs	23 77
7	241	A. H. Tuttle	Zoological specimens	Department supplies	28 25
7	242	Edward Orton	Stationery and sundries	Current expenses	60 25
7	243	same	Assistant teachers	Salaries	165 00
July	1	Kilbourne, Jones & Co	Hardware	Department supplies	30 89
June	10	S. E. Samuel	Supplies for mechanical department	"	36 85
11	244	Hershiser & Gibson	Lumber	Repairs	42 86
11	245	Geo. M. Maris & Co	Nails and lead	"	2 05
11	246	H. W. Derby & Co	Books	Library	15 09
July	10	R. G. Hanford	Trees	Farm	10 00
June	12	G. W. Gleason	Books	Library	29 75
23	247	F. G. Powell	Chariot hire	Current expenses	5 00
July	16	Lewis & Godman	Hinges and screws	Repairs	1 34
June	14	N. S. Townshead	Books, etc	Library	259 62
17	248	Edward Orton	Salary for June	Salaries	275 00
17	249	Sidney A. Norton	"	"	225 00
17	250	Joseph Millikin	"	"	225 00



17	269	N. S. Townshend .....	Salary for June .....	Salaries .....	225 00
17	260	R. W. McFarland .....	" .....	" .....	225 00
17	261	A. H. Tuttle .....	" .....	" .....	225 00
17	262	Luigi Lomia .....	" .....	" .....	100 00
17	263	S. W. Robinson .....	" .....	" .....	225 00
17	264	J. A. Church .....	" .....	" .....	225 00
17	265	J. R. Smith .....	" .....	" .....	150 00
17	266	Thomas Mathew .....	" .....	" .....	85 00
17	267	Alice Williams .....	" .....	" .....	55 00
17	268	N. W. Lord .....	" .....	" .....	50 00
17	269	M. Dillon .....	" .....	" .....	60 00
13	270	T. Vaughn .....	Freight and drayage .....	Current expenses .....	2 73
14	271	Albert Allen .....	Salary as Secretary .....	Salaries .....	130 00
14	272	L. G. Thrall .....	Stationery .....	Current expenses .....	4 50
14	273	N. S. Townshend .....	Cistern .....	Improvement .....	50 00
18	274	C. A. Barton .....	Salary as land agent to June 1st .....	Virginia Military lands .....	544 76
19	275	Columbus Post-Office .....	Postage .....	Current expenses .....	5 12
19	276	S. H. Ellis .....	Expenses as trustee and carriage hire .....	" .....	37 45
19	277	Stephen Johnston .....	" .....	" .....	11 25
19	278	James B. Jamison .....	" .....	" .....	22 00
19	279	T. J. Godfrey .....	" .....	" .....	17 50
19	280	S. H. Short .....	Instructor in Physics .....	Salaries .....	35 00
19	281	C. E. Thorne .....	Care University grounds .....	Current expenses .....	81 44
20	282	Cancelled .....	.....	.....	.....
23	283	Albert Allen .....	Salary as Secretary .....	Salaries .....	30 00
4	284	S. A. Norton .....	Chemicals .....	Department supplies .....	93 36
27	285	Chas. L. Sullivan .....	Repairs .....	Repairs .....	12 90
28	286	E. R. P. Baker .....	" etc .....	" .....	7 00
28	287	Cancelled .....	.....	.....	.....
28	288	C. E. Thorne .....	Freight on retorts .....	Current expenses .....	4 50
28	289	Edward Orton .....	Two retorts and diplomas .....	" .....	116 00
2	290	Albert Allen .....	Salary as Secretary .....	Salaries .....	100 00
2	291	Thomas Mathew .....	Repairs on dwelling house .....	Repairs .....	15 00
2	292	same .....	Supplies for department .....	Department supplies .....	14 39
2	293	Isaac B. Potts .....	Pipes .....	Improvement .....	21 97
2	294	Frederick Schmidt .....	Painting models .....	Department supplies .....	1 75
2	295	J. H. Anderson .....	Expenses as trustee .....	Current expenses .....	2 00
3	296	R. A. Sawyer .....	Cleaning and packing guns .....	" .....	5 50
5	297	Edward Orton .....	Mechanical department supplies .....	Department supplies .....	10 65
7	298	Cott & Hann .....	Printing proposals .....	Current expenses .....	2 00
8	299	James Greenwood & Sons .....	Rent of lathe six months .....	" .....	20 00
8	300	C. E. Thorne .....	Cistern and gate-keeping .....	" .....	41 55



DETAILED ACCOUNT OF DISBURSEMENTS—Continued.

Date.	No. of order	To whom paid.	For what purpose.	From what appropriation.	Amount.
1879.					
July					
9	301	Andrew Schwarz	Plumbing	Repairs	\$3 50
10	302	John Little, late Attorney-General	Fees on \$1,642.37, col't's of former y'rs	Current expenses	49 27
10	303	John R. Billings	Expenses taking deposition	Virginia Military land	15 00
10	304	H. S. Babbitt	Salary to July 1st and expenses	Sal., \$200; curr't exp., \$10.50	210 50
19	305	R. W. McFarland	Expenses	"	12 00
19	306	Stephen Johnson	Expenses as Trustee	"	7 75
19	307	S. H. Ellis	"	"	14 70
19	308	James B. Jamison	"	"	12 00
23	309	M. Dillon	Salary for July	Salaries	60 00
23	310	Edward Orton	Postage, etc	Current expenses	26 50
23	311	same	Advertising	"	71 00
24	312	A. K. Woodward	Carpenter work	"	6 90
31	313	T. Vaughn	Dr. yage	"	1 91
5	314	Nevins & Myers	Circulars, etc	"	10 15
5	315	same	Miscellaneous printing	"	43 40
5	316	Joseph Herman	Painting	Repairs	57 25
11	317	Comly, Francisco & Co	Advertising commencement	Current expenses	3 75
11	318	Geo. M. Maris & Co.	Hardware, etc	Improvement	40 30
12	319	Chas. Nagle	Plastering	Repairs	22 00
15	320	McCune, Mithoff & Co.	Lard oil, etc	Current expenses	19 31
16	321	Halm, Bellows & Butler	Chemical desks	Department supplies	120 00
16	322	Fred Wiegold	Painting black-boards	Repairs	14 40
16	323	Albert Allen	Salary as Secretary, etc	Salaries	125 00
16	324	Stephen Johnson	Expenses as Trustees	Current expenses	7 25
16	325	Thomas Sargent & Son	Carpenter work	Improvement	113 00
11	326	Andrew Schwarz	Plumbing	Repairs	65 42
19	327	John A. Church	Minerals for mining department	Department supplies	65 20
21	328	Abbott, Montgomery & Stoner	Paint and hardware	Repairs	28 46
21	329	T. Vaughn	Freight and drayage	Current expenses	4 64
25	330	John Doyle	Digging and walling well, etc	Improvement	107 00
25	331	A. Carlisle	Lumber	"	81 51
25	332	Strobridge & Co	Engravings for diplomas	Current expenses	56 00
29	333	Albert Allen	Salary as Secretary	Salaries	50 00
29	334	J. S. Doe & Co	Coal	Current expenses	16 35
Aug.					

Sept.	24	O. A. B. Senter .....	Paper trays.....	Current expenses .....	7 00
Aug.	30	Isaac B. Potts .....	Plumbers' supplies.....	Repairs.....	13 21
Sept.	11	Kershaw, Krause & Putnam .....	Laying carpet .....	Current expenses .....	1 00
Aug.	29	Home Insurance Co .....	Insurance on houses.....	" .....	19 00
Sept.	30	Thompson & Dowdall.....	Insurance on Col. b'dings and cont'ts..	" .....	50 00
	8	Wm. B. Potts.....	Repairs and painting roof .....	Repairs.....	87 80
	8	M. Dillon.....	Salary for Augnst.....	Salaries .....	60 00
	8	Martin Krause & Co .....	Brick, and work on well.....	Improvement .....	59 50
	9	Andrew Schwarz .....	Plumbing.....	Repairs, \$14.30; departm't, \$71.	45 30
	10	Crane Bros. Manufacturing Co .....	Steam fittings.....	Repairs.....	39 06
	11	Edward Orton.....	Putting bnildings in order.....	Current expenses .....	100 00
	12	Braun & Bruck .....	Green vitriol.....	" .....	1 50
	23	Edward Orton.....	Salary for September .....	Salaries .....	275 00
	23	Sidney A. Norton .....	" .....	" .....	225 00
	23	Joseph Millikin.....	" .....	" .....	225 00
	23	Norton S. Townshend.....	" .....	" .....	225 00
	23	R. W. McFarland.....	" .....	" .....	225 00
	23	A. H. Tuttle.....	" .....	" .....	225 00
	23	Luigi Lomia.....	" .....	" .....	60 00
	23	S. W. Robinson.....	" .....	" .....	225 00
	23	Net W. Lord.....	" .....	" .....	120 00
	23	Josiah R. Smith .....	" .....	" .....	150 00
	23	Thomas Mathew .....	" .....	" .....	85 00
	23	Alice Williams.....	" .....	" .....	55 00
	23	Mias S. Glover .....	" .....	" .....	12 50
	23	M. Dillon.....	" .....	" .....	60 00
Oct.	6	Wassall Fire Clay Co .....	Pipes and elbows.....	Current expenses .....	2 04
	6	Cott & Hann.....	One hundred postal cards, printed...	" .....	1 75
Sept.	30	A. D. Rodgers, Postmaster .....	Postage, President Orton.....	" .....	10 00
Oct.	6	Patrick Bresnahan.....	Soap, brooms, etc .....	" .....	23 43
Sept.	16	G. M. Maris & Co.....	Door knob, etc.....	" .....	65
	16	Thomas Vaughn.....	Freights.....	" .....	20 90
	18	T. J. Godfrey.....	Expenses as Trustee.....	" .....	15 70
	18	Hon. Stephen Johnston.....	" .....	" .....	8 25
	23	John T. Short .....	Salary for September .....	Salaries .....	150 00
	30	Albert Allen.....	Salary as Secretary, etc .....	" .....	120 00
	30	Asa Gray.....	"Flora Brazilianis" .....	Library .....	16 55
Oct.	2	S. H. Ellis.....	Expenses as Trustee.....	Current expenses .....	22 10
	3	Alston Ellis .....	" .....	" .....	2 50
	3	James B. Jamison.....	" .....	" .....	26 00
	4	Herniser & Gibson.....	Lumber .....	Repairs.....	4 30
	6	L. G. Thrall & Co .....	Printing and binding two order books.	Current expenses .....	8 75

ANNUAL REPORT.

DETAILED STATEMENT OF PAYMENTS MADE, ETC.—Continued.

Date.	No. of order	To whom paid.	For what purpose.	From what appropriation.	Amount.
1879.					
Oct. 9	377	A. S. W. Huffman.....	Pump .....	Improvement .....	\$16 65
8	378	Thomas McDonald.....	Paving boiler house, etc.....	" .....	84 40
13	379	Patrick Bresnahan.....	Seventeen days' labor .....	" .....	21 25
18	380	A. H. Tuttle.....	Histological preparations.....	Department supplies .....	21 00
18	381	Luigi Lomia.....	Musical instruments.....	Special .....	50 00
18	382	G. W. Weinman .....	Steam pump, etc.....	Improvement .....	69 00
20	383	H. Bancroft .....	Insurance on buildings and contents..	Current expenses .....	75 00
20	384	Wm. A. Gill, agent.....	" .....	" .....	25 00
20	385	Gardner & Byers .....	Insurance on building and contents..	" .....	70 00
20	386	Zelotes Wood .....	" .....	" .....	25 00
20	387	Thompson & Dowdall .....	" .....	" .....	75 00
20	388	Thos. J. Driskell & Co.....	New boiler, and repairs on old.....	Improvement.....	876 67
27	389	James R. Jamison .....	Expenses as Trustee, etc .....	Current expenses .....	42 85
27	390	C. E. Thorne.....	Expenses, in charge of Jersey cattle..	Farm .....	23 70
27	391	Albert Allen.....	Traveling expenses (buying Jerseys)...	" .....	25 25
27	392	Thomas Vaughn .....	Freight and drayage .....	Current expenses .....	25 07
27	393	Lewis Fink.....	Kalsomining room .....	Repairs.....	20 00
28	394	Edward Orton.....	Salary for October .....	Salaries .....	275 00
28	395	S. A. Norton.....	" .....	" .....	225 00
28	396	Joseph Millikin.....	" .....	" .....	225 00
28	397	N. S. Townshend .....	" .....	" .....	225 00
28	398	R. W. McFarland .....	" .....	" .....	225 00
28	399	A. H. Tuttle.....	" .....	" .....	225 00
28	400	Luigi Lomia.....	" .....	" .....	60 00
28	401	N. W. Lord.....	" .....	Salaries .....	120 00
28	402	S. W. Robinson.....	" .....	" .....	225 00
28	403	J. R. Smith.....	" .....	" .....	150 00
28	404	John T. Short .....	" .....	" .....	150 00
28	405	Thos. Mathew.....	" .....	" .....	95 00
28	406	Alice Williams.....	" .....	" .....	55 00
	407	M. Dillon .....	" .....	" .....	60 00
		W. J. Den & Son.....	Castings .....	Departments .....	30 93
			Ball cock and ball, and die.....	Repairs.....	6 95
			Glass, etc.....	" .....	5 90

Nov.	1	Halm, Bellows & Butler .....	Desk improvement .....	Departments .....	2 00
	1	Sidney A. Norton .....	For desks in Laboratory .....	Department repairs .....	59 86
	1	Thos. Mathew .....	Supplies for Department .....	" .....	34 38
	1	Aston & Huff .....	Ventilating pipe .....	Improvements .....	11 40
	1	C. E. Thorne .....	Cost in court .....	Current expenses .....	10 00
	5	Stephen Johnston .....	Expenses as trustee .....	" .....	7 00
	6	A. H. Smythe .....	Stationery .....	" .....	12 26
	6	Geo. W. Gleason .....	" .....	" .....	9 42
	6	I. B. Potts .....	Repairing street pipes .....	Departments .....	46 16
	6	Stitt, Price & Co .....	Lime for gas .....	Current expenses .....	6 00
	7	Albert Allen .....	Salary as secretary, etc .....	Salaries .....	110 00
	7	Henry S. Babbitt .....	Salary as treasurer, etc .....	" .....	150 00
	8	Sidney A. Norton .....	Chemical supplies .....	Department supplies .....	577 16
	10	C. E. Thorne .....	Care of University grounds .....	Current .....	132 09
	10	Halm, Bellows & Butler .....	Desk for Prof. Short .....	Departments .....	10 00
	11	Edward Orton .....	Hooks .....	Library .....	22 78
	11	.....	Canceled, (See No. 345) .....	.....	.....
	11	Edward Orton .....	Miscellaneous expenses .....	Current .....	50 02
	12	Lyonsdale Coal Co .....	Coal to date .....	" .....	378 52
		Total disbursements .....	.....	.....	<u>\$37,389 54</u>

Total receipts, as shown by statements I and IV .....	\$42,376 46
Total disbursements, as above .....	<u>37,389 54</u>
Cash balance on hand .....	<u>\$4,986 92</u>

REPORT OF THE FINANCE COMMITTEE.  
HENRY S. BABBITT, Treasurer.

COLUMBUS, OHIO, November 14, 1879.

The accounts and vouchers of the treasurer have been examined and compared with those shown by the Secretary's record and found to be correct. An examination shows that the balance reported by the Treasurer is on deposit in the National Exchange Bank, and subject to his order. The report of the Treasurer is correct in every particular, and its acceptance is hereby recommended.

ALSTON ELLIS,  
STEPHEN JOHNSTON,  
Finance Committee Ohio State University.

# FARM DEPARTMENT.

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## REPORT OF FARM COMMITTEE.

HON. T. J. GODFREY, *President Board of Trustees of Ohio State University:*

SIR: Your Committee, known as the "Farm Committee," beg leave to make the following report:

You placed in our hands the disbursements of the Legislative appropriations for "river improvement" and "farm improvement and stock."

As to the river improvement, we found that the work to be done, so as to make it permanent, required the expenditure of a greater sum of money than was at first supposed. The purchase of land, court costs, construction of dams and levees, digging of new channel, etc., required an outlay of \$2,434.80. Vouchers covering this amount may be found on file in the Auditor's office. The Legislature appropriated \$1,500 for this purpose, and, to meet the remainder of this expense, warrants were drawn upon the appropriation for "farm improvements and stock" account for \$934.80, which it is hoped the Legislature will reimburse to that fund, so much needed for other farm improvements and stock.

Of the appropriation for farm improvements and stock, amounting to \$3,000, the following expenditures have been made, viz:

For six Jersey cows and one calf.....	\$923 50
For High street improvement.....	122 54
Advanced on river improvement .....	934 80
For fruit trees, etc .....	414 46
Total .....	<u>\$2,395 30</u>

Leaving an unexpended balance undrawn of this fund of \$604.70.

As to the conducting of the various farm operations, we have found that we must necessarily intrust much to the judgment of the Farm Superintendent. For a fuller account of the farm operations, cost of production, etc., we refer you to the report of the Farm Superintendent, which is herewith submitted.

S. H. ELLIS,  
JAS. B. JAMISON,  
J. H. ANDERSON,  
*Committee.*

REPORT OF FARM MANAGER.

S. H. ELLIS, ESQ., *Chairman Farm Committee Ohio State University:*

DEAR SIR: I have the honor to submit the following report of the operations of the farm department for the year ending November 1, 1879:

The beginning of the year found our hogs suffering from the disease known as hog cholera, from which seven large hogs and twenty-four pigs died, making a loss to the farm, including the injury to the remainder of the herd, of not less than two hundred dollars. The means resorted to for checking the disease have been discussed at length by Dr. Townshend in the report of the Secretary of State for 1878, and need not be referred to here further than to state that symptoms of the disease made their appearance again during October, when the hyposulphate of soda was immediately resorted to, and at present writing the hogs seem to have entirely recovered. It is probable that the attack was, in this case, a very light one.

During April, May, and June, we suffered from a protracted drouth, which shortened our crop of hay to about one-fourth the usual yield, and seriously injured our pastures.

Wheat was an excellent crop. Oats very poor, and corn but medium, owing to the difficulty of securing a stand in the spring, from the seed having been injured by the severe winter, and to the spring drouth. A second long-continued drouth has severely injured the fall pasturage and the growing wheat crop.

The following summary gives the acreage, cost of production, yield, and value of the principal crops grown on the farm during the year:

Kind of Crop.	Acres.	Cost per acre.	Yield per acre.		Profit per acre.	Total crop.	
			Amount.	Value.		Amount.	Value.
Hay .....	40	\$1 35	$\frac{1}{2}$ tons.	\$8 00	\$6 65	26 $\frac{1}{2}$ tons.	\$320 00
Wheat .....	44	10 78	30 $\frac{1}{4}$ bush.	36 42	25 64	1346 bush.	1,602 71
Oats .....	8 $\frac{1}{2}$	4 34	30 "	11 00	6 66	255 "	93 50
Rye .....	6	5 42	25 "	15 50	10 08	150 "	93 00
Corn .....	53 $\frac{1}{2}$	8 43	55 "	21 35	12 82	2900 "	1,118 00
Pasture .....	62	.....	.....	5 64	5 64	.....	350 00
Minor crops .....	14	13 16	.....	18 04	4 88	.....	252 56
Totals .....	228	.....	.....	.....	.....	.....	\$3,829 77

NOTE.—In the above estimates, the wheat crop is charged with \$1.09 per acre for manure and expense of application; the corn crop with \$2 26 per acre for the same object. The meadows are credited with \$2 00 per acre for pasturage of aftermath; the wheat and oats with \$2.00, and the rye with \$3.00 per acre for value of straw, and the corn with \$2.10 per acre for value of fodder. The yield of the pastures is estimated from the increase in weight of the stock cattle, and from a charge of \$1.50 per head per month for the dairy cows and horses pastured upon them.

STUDENT LABOR.

During the year twelve hundred and fifty dollars have been paid to students of the University for labor upon the farm, and it is due to the young men who gave this service to say that in nearly all cases their duties have been faithfully performed. The dairy department is entirely under their care, and by their good management they have increased the sale of milk from an average of fifty-three dollars per month for the first quarter of the year, to one hundred and seven dollars per month for the last quarter.

FARM IMPROVEMENTS.

The following permanent improvements have been made upon the farm during the year :

(A) *Drains.*

- (1) The system of drain in field No. 1 has been extended southward a distance of twenty-six rods, involving an expenditure for tile of \$5.90 and for labor of \$9 00—total, \$14.90.
- (2) A drain, seventeen rods long, has been made in field No. 7, to cut off a spring which was oozing from the foot of the bluff in that field, and injuring the land below, at a cost in labor of \$1.95 and in tile of \$4.59—total, \$6.54.
- (3) A system of drains has been made in the east end of field No. 9 (since planted with fruit trees), comprising a total length of 228 rods, 144 rods of which were of three and four-inch drain, and 84 rods were of six-inch outlet. This improvement cost—in tile, \$74.41 and in labor, \$72 05—total, \$146.46.

(B) *The Planting of an Orchard.*

For reasons of farm convenience the eastern part of field No. 9, lying between the barns and the main college building, was set apart for this purpose. The land was first thoroughly drained, then manured and double plowed to the depth of twelve inches, and planted with apples, standard and dwarf pears, cherries, plums, quinces, and grapes, with small fruits between the cherries and apples. On the north and west sides a double belt of Norway spruce was planted, which was continued on the south side in a series of groups. The outlay for this improvement, in addition to purchase of stock, has been as follows :

For freight and stock.....	\$20 00
For manuring and preparing land.....	85 41
For planting and care .....	83 60
Total .....	<u>\$189 01</u>



*(C) Minor Improvements.*

Numerous other improvements have been made, including the starting of a plantation of Catalpas and Black Locusts; the refitting of the horse stables; the removal of stumps, stones, etc., from the fields; the rebuilding of the bridge upon the lawn, and the replacing of old rail fences with posts and boards—the total cost of which has been \$164.76, including \$63.33 for material and \$101.43 for labor.

In addition to the above sums, labor to the amount of \$49.20 has been expended in the construction of improvements which are not yet completed.

## RECEIPTS AND EXPENDITURES.

The following statements show the receipts and expenditures of the department for the year :

## STATEMENT "A."

## RECEIPTS FROM FARM PRODUCE FOR THE YEAR ENDING OCTOBER 31, 1879.

Received for 1 bull and 8 steers.....	\$550 30
" 134½ tons of hay .....	924 84
" 20½ tons of straw .....	94 15
" 1,044 bushels of corn.....	308 83
" 84½ bushels of oats.....	17 82
" 865½ bushels of wheat marketed.....	885 46
" 358½ bushels of seed wheat .....	465 85
" 35 bushels of rye .....	18 25
" 18,938 quarts of milk.....	957 53
" 28 hogs and pigs .....	203 30
" 23 dead hogs and pigs (sold to soap-makers).....	12 91
" feed and pasture .....	143 36
" garden produce and potatoes.....	122 36
" 102 cords of wood.....	18 35
" walnut wood and lumber .....	162 45
" labor for other departments and outside parties.....	356 81
" rents and miscellaneous sales .....	166 70
" impounding stock.....	18 00
Total receipts from sale of stock.....	\$5,421 27

## STATEMENT "B."

## EXPENDITURES ON FARM ACCOUNT FOR THE YEAR ENDING OCTOBER 31, 1879.

Paid for labor employed .....	\$2,384 21
for pressing 99 tons hay and straw .....	298 44
for purchase of feed.....	182 18
for other incidental expenses (including threshing of grain, smith work, and all repairs, purchase of seeds, manure, etc).....	591 77
for superintendence of farm work .....	550 00
Total expenditure for current expenses .....	\$4,006 60
Balance, surplus.....	1,414 67
Total .....	\$5,421 27



## STATEMENT "C."

RECEIPTS AND EXPENDITURES ON ACCOUNT OF PERMANENT IMPROVEMENT AND FARM  
EXPERIMENTS, FOR THE YEAR ENDING OCTOBER 31, 1879.*Receipts.*

Cash on hand Nov. 1, 1878 .....	\$101 70
Received from University funds, per Farm Committee .....	500 00
from surplus from farming operations .....	1,414 67
Total receipts for above named purposes .....	<u>\$2,016 37</u>

*Expenditures.*

Paid for labor employed in permanent improvements .....	\$402 64
for material used in permanent improvements .....	311 20
for live stock added to inventory .....	471 15
for implements added to inventory .....	306 41
for labor employed in experimental work .....	45 00
for incidental expenses of experimental work .....	15 88
for superintendence of experimental work .....	50 00
Total expenditures for improvements and expenses .....	<u>\$1,602 28</u>
Balance cash on hand and accounts due .....	\$414 09

The foregoing is respectfully submitted.

C. E. THORNE, *Farm Manager.*

# RECORD OF PROCEEDINGS

## OF THE BOARD OF TRUSTEES OF OHIO STATE UNIVERSITY.

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COLUMBUS, OHIO, *November 29, 1878.*

Board met at 2½ o'clock P.M., Messrs. Miller, Anderson, Godfrey and Jamison present.

The minutes of the previous meeting were amended and approved.

Mr. Erasmus Tucker and J. F. Miles appeared before the Board and submitted the following proposition :

We, the undersigned, do hereby agree to purchase of the Board of Trustees of the Ohio State University, all lands belonging to said University in Scioto county, as shown by the late report of Charles A. Barton, Agent, including lots from 1 to 20 inclusive, and lots 41, 44, 46, 50, 51, 54, 59, 103, 107, 110, 112, 113, 114, and 115 to 120 inclusive, containing 11,903 13-100 acres, at the estimated value of \$6,391.24, and lot 111 of 100 acres, as per original survey, at \$108.76 ; making in all 12,003 13-100 acres, at \$6,500, to be paid for as follows, viz., one-fourth cash on the delivery of the title bonds (on or before December 10, 1878), one-fourth in one year, one-fourth in two years, and one-fourth in three years from date of said bonds, with 6 per cent. interest, payable annually on the deferred payments. Of the above named lots the Board reserves from this proposition, as already probably sold, or otherwise disposed of, 100 acres out of lot 59 (S. W. part). In case of any sale upon the part of E. Tucker and J. F. Miles, before payment in full has been made, of any or all lands mentioned above, the Board of Trustees shall execute a deed to the purchaser, upon payment to said Board of money or moneys still due under the terms of this purchase on any of said lot or lots. And in order to enable said Board to so convey by deed, the title bonds are to be given for each lot separately at the time the cash payment is made, as stated above. The deeds are to be of same form as heretofore used by said University. Any clerical errors in the number of acres or amounts in C. A. Barton's report, as cited, are to be corrected.

(Signed)

ERASMUS TUCKER,  
J. F. MILES.

On motion it was

*Resolved*, That the said proposition be and the same is hereby accepted by the Board, and that Chas. A. Barton, agent for the Board, is directed to execute bonds to said purchasers, and otherwise to execute this contract of sale in accordance with the law and custom in selling the lands belonging to the University.

The Board authorized the purchase of a desk for the Secretary's use.

Hon. M. A. Daugherty appeared before the Board and presented a written account of Wm. H. Leete's, against the University, for legal services as attorney in prosecuting land suits, whereupon it was

*Resolved*, That the account of William H. Leete, presented by M. A. Daugherty, against the University, for legal services, be referred to Messrs. Godfrey and Johnston, with request to report on the same at the regular meeting in January next.

The report of the Treasurer, Dr. H. S. Babbitt, having been read, was received and ordered to be filed by the Secretary.

On motion, it was

*Resolved*, That the Board request Prof. McFarland to act as *bursar* in the collection of all fees due from the students during the collegiate year, and pay over all sums so collected to the Secretary.

On motion, a bill of \$32 40, presented by Dr. Townshend, for the "Flora of Brazil," a work in part donated by Wm. Sullivant, was ordered to be paid.

On motion, it was

*Resolved*, That the sum of \$100 be appropriated for the purpose of purchasing supplies for the Chemical Laboratory.

The Board then adjourned to meet January 6, 1879, at 8 o'clock P.M.

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COLUMBUS, *January 7, 1879.*

Board met at 10 o'clock A.M.

Present—Messrs. Godfrey, Jamison, Miller, S. H. Ellis, Anderson, and Johnston.

Minutes of the previous meeting were approved.

Mr. Miller moved that Prof. McFarland be allowed \$8.33 compensation per term for collecting students' fees and accounting for same to the Secretary. Carried.

Moved by Mr. Jamison, that Stephen Johnston be appointed a committee of one to take the supervision of land in Logan county, the discovery of which had been contracted for by Messrs. Orr and Gaver. Carried.

Capt. C. A. Barton appeared before the Board, submitting a report of lands sold, and bill of expenses incurred since last meeting of the Board. After examination of said bill of \$147.10, with the vouchers for the same, the Board ordered the same to be paid, together with \$120, two months' salary due to January 1, 1879.

On motion, Board adjourned to January 9, at 8 o'clock P.M., the intermediate time to be employed examining the condition of the University.

COLUMBUS, *January 9, 1879.*

Board met pursuant to adjournment—all the members present.

A communication was read by Mr. Johnston, proposing a basis of settlement with Ralph and William Leete. After consideration of same, a motion for adoption was lost.

On motion of Mr. Miller,

*Ordered*, That the sum of \$50 be appropriated for the purchase of supplies for the Physical and Mechanical Laboratory.

Messrs. Godfrey and Johnston made the following report :

The committee to whom was referred the bill of W. H. Leete for services rendered as per bill stated, amounting to \$203, recommend the payment of the sum of \$125 on said account, reserving the bill for further explanation.

(Signed)

STEPHEN JOHNSTON,

T. J. GODFREY,

*Committee.*

On motion, the report was adopted, and payment of the amount mentioned ordered.

A bill was presented by Ralph Leete for services rendered in attending to suits in the case of the University against Samuel Cooper and W. J. McKinney *et al.*, in Adams county, amounting to \$172 30.

On motion of Alston Ellis,

*Ordered*, That the bill of Ralph Leete for \$172.30 for legal services, and money expended in attending the cases of the Ohio State University *vs.* Samuel Cooper, and the Ohio State University *vs.* W. J. McKinney *et al.*, in Adams county, be paid.

On motion,

*Resolved*, That the Secretary of this Board be instructed to notify Messrs. Ralph and Wm. H. Leete that their services as attorneys are no longer desired by this Board, and that any bills against the University presented by said Leetes for professional services rendered hereafter will not be allowed.

The ayes and nays having been demanded, Messrs. Godfrey, Miller, Anderson, A. Ellis, S. H. Ellis, and Jamison voted aye.

Mr. Johnston voted nay.

So the resolution was declared carried in the affirmative.

On motion of Alston Ellis,

*Ordered*, That the sum of fifty dollars (\$50) be and is hereby appropriated, to be expended under the direction of the Executive Committee, to aid in the purchase of musical instruments for the use of the University Band.

The Board having extended an invitation to the Senate and House Committees on Finance to visit, with them, the University on the following day, adjourned to meet January 10, 1879, at 5 o'clock P.M.

COLUMBUS, *January* 10, 1879.

Board met promptly at 5 o'clock P.M.

Present—Messrs. Godfrey, Jamison, S. H. Ellis, A. Ellis, and Miller.

After a conference with Mr. Alexander, Chairman of the House Committee on Finance, concerning appropriations asked for the University, the Board proceeded to regular business.

On motion of T. E. Miller,

*Ordered*, That the sum of \$200 be and is hereby appropriated for the purchase of supplies for the Chemical Department.

On motion of A. Ellis,

*Ordered*, That the sum of \$500 be and is hereby appropriated for the use of the Farm Committee in the management of the University farm.

In conference, the Board recommended that the Farm Committee remain for several days in looking over the status of the farm, and deciding upon the proper course to be pursued in its management during the year.

The Board also requested a full report of the proceedings of the Executive Committee to be presented at their next meeting.

The Board then adjourned, subject to the call of the President.

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COLUMBUS, *April* 15, 1879.

A called meeting of the Board of Trustees of the Ohio State University was held this day. All the members present except Mr. Jamison.

The minutes of the last meeting were approved. The Executive Committee made a full report of their proceedings to date.

The matter of renting the boarding-house was considered, and action thereon referred to the Executive Committee.

On motion, it was

*Ordered*, That a further appropriation of \$35.00 be and is hereby made, for the payment of assistant teachers during the third term of this session.

*Ordered*, That \$35.00 be expended by President Orton in the purchase of books and paper trays.

*Ordered*, That \$20.00 be appropriated for the purchase of supplies for the Mechanical Department.

On motion of Mr. Johnston, the resignation of President Orton, as President of the University, tendered on the 20th of June, 1878, was taken from the table, and the Secretary was directed to advise President Orton that it was the unanimous request of the Board that he continue as President.

A letter from ex-Attorney-General Little, asking allowance for services as attorney in the prosecution of eight suits during his term as attorney-general, was referred to the Secretary, with instructions to report at the next meeting of the Board.

On motion,

*Resolved*, That the two cases in Adams County Common Pleas, in which the Agricultural and Mechanical College is plaintiff (one against Wm. J. McKinney et al., and one against Samuel Cooper), are hereby placed in charge of the Attorney-General, with full power to act in behalf of the University in the management of said causes—the employment of local counsel, etc. The Attorney-General is requested to proceed, at once, to have taken the depositions of Jacob S. Rose, of Adams county, and the Executive Committee of this Board is directed to furnish money sufficient to pay the expenses of depositions, and that it is the desire of this Board that said cases be tried at the May term, 1879.

Communications were received from Chas. A. Barton, and the Secretary instructed to request Mr. Barton to do all he could in the collection of old notes due the University, and such other work as was most urgent, and of greatest importance to the financial interests of the University.

On motion, it was

*Resolved*, That the Secretary be allowed one dollar per day for services performed and required of him outside of the ordinary duties of Secretary, from the time of his appointment.

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COLUMBUS, *June 16, 1879.*

At the regular meeting of the Board of Trustees on this day, all the members were present except Messrs. Johnston and S. H. Ellis.

The minutes of the previous meeting were read and signed.

The Secretary reported that the General Assembly had appropriated, on the 22d day of May, 1879, \$15,800 for the Ohio State University, to be expended as follows, viz.:

For Farm Improvement and Stock .....	\$3,000
“ Mechanical Laboratory and Equipment.....	9,600
“ River Improvement.....	1,500
“ Solar Compass.....	500
“ Chemical Analysis, required by State law .....	1,200

J. T. Harris, architect, appeared before the Board with plans, specifications, elevations, detailed drawings, and estimates for the Mechanical Laboratory building. Whereupon the Board went into executive session, and, after due consideration, approved the plans, etc., and directed the same to be presented, for approval, to the Governor, Secretary of State, and Auditor, and when so approved, to deposit same with the Auditor, as required by law.

A notice to contractors, inviting proposals, was ordered to be published four weeks in the following papers, viz.: Cincinnati Enquirer, Cleveland Leader, Toledo Blade, and Columbus Dispatch.

The Secretary was instructed to prepare and have printed proper forms of proposals to furnish applicants.

On motion of A. Ellis,

*Resolved*, That Prof. McFarland be directed to expend for the University the \$500 appropriated for the solar compass.

A recess was taken until 9 o'clock on the morning of the 17th instant, when all the members of the Board were present.

On motion, it was

*Ordered*, That the claim of Attorney Little of \$49.27 (being 3 per cent. on \$1,642.37 collected for the Agricultural and Mechanical College) be paid.

A report from the Executive Committee was read and approved.

On motion,

*Resolved*, That the President and Secretary of the Board be instructed to invite the Governor, both branches of the General Assembly, and State officers to attend the annual commencement of the University, to be held on Wednesday afternoon, June 18, 1879.

Mr. Beebe appeared before the Board and asked for allowances for survey, cost, attorney's fees, and taxes on lands purchased of the Agricultural and Mechanical College several years ago. Whereupon, on motion of Mr. Johnston, the whole matter was referred to Capt. C. A. Barton, with instructions to report at the next meeting of the Board.

On recommendation of the Faculty the regular degree of Bachelor of Science was conferred on the following students: J. Scott Humphrey, Amasa B. McMackin, Mary F. Morrison, Henry Snyder, Jr., and Robert S. Towne.

The degree of B.A. was conferred on Warren F. Noble; the degree of Ph.D. (in course) on Prof. H. A. Weber, of Illinois; and the degree of Ph.D. (honorary) on John B. Peaslee, Cincinnati.

Miss. S. Glover was appointed assistant librarian for one year, at a salary of \$125.00.

The President of the Faculty and the Department Professor were authorized to appoint assistants in the Department of Physics and of Latin and Greek.

On motion, it was resolved to place the boarding-house at the disposal of President Orton, to be used as a club house for students, under such regulations and arrangements as he may determine.

The report of Capt. Barton, agent, was received and filed, and his account for salary, expenses, and costs ordered to be paid.

On motion of Mr. Johnston, the following preamble and resolutions were adopted:

**WHEREAS**, It has been made to appear to the Board that some of the Virginia military lands situated in the counties of Pike and Adams, have heretofore been appraised at prices in excess of the market value thereof; therefore,

*Resolved*, That Capt. Barton be and is hereby authorized to cause a reappraisement of such lands at their real value, and that he be authorized to make sale under the reappraisement so made. Passed.

**WHEREAS**, Peter Perdue has, by mistake, made a preëmption and improvement on lot No. 156 in Pike county, intending thereby to make preëmption and improvement on lot No. 260; and,

**WHEREAS**, The Board deem it just and equitable to exchange deeds, so as to correct the mistake; therefore,

*Resolved*, That Capt. Barton be and is hereby instructed to cause a deed to be made to said Perdue, for No. 260, when the said Perdue shall execute and pay for the record of a clear deed for said lot No. 156 to the Ohio State University.

Passed.

**WHEREAS**, A deed was made by the A. & M. College to John Lutors, for lot No. —, in Pike county, containing 35 acres, for the sum of \$52.71; and,

**WHEREAS**, It has been made to appear, to the satisfaction of the Board, that the said lot had heretofore been deeded by the A. & M. College to Saul Hendricks, and duly recorded, and that the said sale to Teeters was through a misapprehension of the facts, therefore,

*Resolved*, That Captain Barton be and is hereby authorized to refund the purchase money to said Teeters, and that he take from said Teeters a proper voucher therefor, and file the same with the Secretary of Board.

On motion of J. H. Anderson,

*Resolved*, That the degree of Doctor of Laws be and is hereby conferred by this Board on the Hon. Allen G. Thurman and Hon. Morrison G. Waite, in recognition of their learning, ability, and eminent public services.

*Resolved*, That Captain Barton be and is hereby authorized to take charge of the Virginia Military Lands belonging to the Ohio State University, now discovered, or that may come to his knowledge (not heretofore reported), and that he take such steps, from time to time, as may be necessary to advance and protect the interests of the University in said lands, so as to dispose of said lands as soon as possible.

O motion of A. Ellis,

*Ordered*, That the secretary of the Board be and he is hereby authorized to draw his warrant on the Treasurer of State for any and all moneys appropriated by the General Assembly for the Ohio State University, whenever the accounts and bills payable under the several items of said appropriation have been approved as follows, to-wit: "For Mechanical Laboratory and equipment," on estimates endorsed by the architect and approved by the chairman of the Executive Committee; for "river improvement," "farm improvement and stock," when approved by the chairman of the Farm Committee; and for "solar compass and chemical analyses required by State law," when approved by chairmen of Executive Committee.



Stephen Johnston was elected Vice-President of the Board, to preside at all meetings in the absence of the President.

A communication from Samuel Kendrick, Esq., concerning the withdrawal on the part of the Board of certain caveats with accompanying papers, was referred to Capt. Barton, to report upon at the next meeting of the Board.

*Ordered*, That certain cost bills amounting to \$110.18, submitted by court officers of Pike county, be referred to Captain Barton to examine, and to pay as he may decide proper.

THURSDAY, *June* 18, 1879.

Board resumed its session at 8 o'clock A. M. All the members present.

*Ordered*, That the President of the Faculty be requested to have suitable honorary diplomas prepared.

*Ordered*, That the Executive Committee and President of the University be authorized to expend \$100 in advertising in such manner as they may deem proper.

*Ordered*, That \$600 be advanced for supplies for the Chemical Department, to be expended under the direction of the Executive Committee.

*Ordered*, That \$300 be expended by the Executive Committee for desks for Chemical Department.

*Ordered*, That Executive Committee be authorized to purchase all coal needed for the ensuing year.

*Ordered*, That the following appropriations be made for the several departments, to wit:

1.	For Department of Latin and Greek.....	\$225 00
2.	“ Physics and Mechanics.....	200 00
3.	“ Zoology.....	125 00
4.	For President's department.....	150 00
5.	For Library .....	100 00
6.	For Department of Mining .....	150 00
7.	“ Drawing .....	50 00
8.	“ Zoology.....	75 00

Nos. 1, 2, 3, and 4 to be expended under direction of the President for *student helps* for the year ending June 30, 1880, and 5, 6, 7, and 8 for *supplies*, under direction of the Executive Committee.

The following was offered by A. Ellis:

WHEREAS, It is no longer deemed expedient by this Board to continue the present status of the Mining and Metallurgical Department, whereby a professor and an assistant are employed in doing the work that can be well, and fully done, by one; therefore,

*Resolved*, That the department be placed in charge of an assistant professor for the ensuing year, and that Nat. W. Lord, M.E., be employed as assistant professor, at a salary of \$1200 per year.

*Resolved*, That the Secretary of the Board is hereby instructed to inform Prof. John A. Church that his services are no longer required, and this action is based on economic reasons alone.

*Resolved*, That, as a Board, we recognize the able and scholarly services of Prof. John A. Church in behalf of his department since his connection with the University.

The ayes and nays being called, resulted in unanimous affirmative—Messrs. Miller and Anderson being absent.

*Ordered*, That the salary of the assistant professor in the Mining and Metallurgical Department of \$1,200 be paid one-half from the endowment fund, and the other half from the State appropriation for chemical analyses required by the State law.

It was decided to hold the usual course of Winter Lectures on Agriculture and Mechanics; said course to be held at such time and in such manner as may be jointly agreed upon by the Faculty of the University and the Farm Committee of the Board.

*Ordered*, That all matters of improvement or repairs to engine, college buildings, and tenement, cloak room, ventilation, gas, cistern, pipes, etc., be referred to the Executive Committee to act upon, and that the same Committee, with the President of the Faculty, be instructed to locate the two literary society rooms, and a room for the new department of History and Philosophy.

*Resolved*, That whereas Prof. Luigi Lomia has been detailed by the general government to act as Professor of Military Science and Tactics; therefore,

*Resolved*, That said Prof. Lomia be continued as adjunct Professor of Mathematics and teacher of Elocution, at a salary of \$600, for the ensuing year.

Mr. A. Ellis offered the following:

WHEREAS, Much complaint has been heard in reference to placing guards in the University during the late commencement exercises, whereby many persons late in arriving were denied admittance to the University; and,

WHEREAS, The Board deem such action, though well meant and defensible in some particulars, ill-advised and tending to the detriment of the University, by reason of the unfavorable comments it called forth from many friends of the institution, who were desirous of witnessing its closing exercises; therefore,

*Resolved*, That the Faculty be and are hereby instructed, on future occasions of a similar character, to forbid the employment of the University Cadets as such in guarding the entrances to the building and chapel, and so to arrange that persons visiting the institution during commencement day may have free access to the building under the guidance of ushers appointed by the Faculty.

On motion of Mr. Johnston,

*Resolved*, That the Board of Trustees of the Ohio State University hereby express their gratification at the organization of the University Band, and their great proficiency in music in so short a time, and that they express the hope that they will continue their organization as one of the important branches of the University, and hereby appropriate the sum of \$50 for their use, in addition to the former sum appropriated.

Passed.

A communication from C. E. Thorne, concerning compensation for personal injuries received by Robert Price, was indefinitely postponed.

On motion of Mr. A. Ellis,

*Resolved*, A Department of History and Philosophy be established in connection with the Ohio State University, and that, for the present, the department be placed under the charge of an Assistant Professor, whose salary shall be \$1,500 per annum.

*Resolved*, That the position of Assistant Professor in said department be tendered to Prof. John T. Short, of Columbus, and that the Secretary be instructed to notify Prof. Short of his appointment.

A call of the ayes and nays on the following being demanded, the resolutions were unanimously passed :

*Resolved*, That the Secretary be requested to notify the parties upon whom the Board had passed honorary degrees.

*Resolved*, That the Farm Committee be instructed to spend a sum not exceeding \$400 for the High street improvement, and that they be and are hereby instructed also to engage the services of a skilled landscape gardener to lay out and present an acceptable plat for the improvement of the campus and other grounds in front of the University, and reaching to High street, so that all subsequent improvements can be made conformable thereto.

Passed.

On motion,

*Resolved*, That the President and members of the Faculty other than those upon whose case special action has been taken at the present session of the Board, be and are hereby continued for the period of one year.

*Resolved*, That Prof. McFarland continue to act as bursar, at a salary of \$25.00 per annum.

On motion, the Board adjourned, to meet at 2 o'clock P.M. on July 18, 1879.

STEPHEN JOHNSTON, *President pro tem.*

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COLUMBUS, OHIO, *July 18, 1879.*

Board met at 8 o'clock P.M. Present, Messrs. Anderson, S. H. Ellis, Jamison, Alston Ellis, Miller, and Johnston.

Mr. Johnston, Vice President, occupied the chair.

Minutes of the previous meeting were read, and signed by chairman *pro tem.*

On motion,

*Ordered*, That Prof. McFarland, who was present on invitation of the Board, to confer relative to landscape improvements, be paid his expenses, amounting to \$12.00.

Proposals for building the Mechanical Laboratory were duly opened, in the order of names and amounts, as follows, viz :

Thomas F. Jones .....	\$4,888 00
Thos. Harding & Bro .....	4,726 50
Fred. Weadon .....	4,748 50
H. W. Newell .....	4,978 00
E. N. Jones .....	4,889 00
Wm. Hershiser & Son .....	4,942 89
Fornoff & Son .....	4,711 85
Clarke & Fahey .....	4,550 00

The bid of John D. Clarke and Michael Fahey being the lowest, on motion, their bid of \$4,550.00 was accepted, and the President or Vice President and Secretary were instructed to enter into contract with said parties, stipulating the 1st day of October next as the time when said building was to be completed, with a penalty of five dollars per day for each day the work is delayed beyond that time; and should said parties fail to enter into contract, the Vice-President and Secretary should enter into contract with the next lowest bidder.

Several matters, relating to the building of an engine, supplying drinking water to the building, and the building of a brick wall, in place of wooden one now surrounding the boilers were referred to Executive Committee for their action thereon.

Board took a recess until the following morning at 8 o'clock.

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SATURDAY, *July* 19th, 1879, 8 o'clock A. M.

The Farm Committee represented that they had entered into contract with Mary F. Lesle, guardian, through her agent J. H. Hess, for the purchase of 12 14-100 acres of land, for which an appropriation, styled "river improvement," had been made at the last session of the General Assembly, agreeing to pay therefor the sum of \$607, and fees of the Probate Court, Sheriff and Appraiser's fees. The contract was approved, and the Committee authorized to proceed to secure a proper title of the land.

On motion of Mr. Jamison,

*Resolved*, That Prof. Robinson be requested to visit the best Eastern manufacturers of such machinery as will be needed to equip the Mechanical Laboratory, and make report to the Executive Committee, and that his reasonable expenses be allowed by said Committee.

On motion,

*Ordered*, That, [in the absence of special action by the Board, the Farm Committee are hereby authorized to direct the expenditure of the appropriation made by the Legislature for river improvement, farm improvement, and stock, and that the Executive Committee have the same power to expend the appropriation made for the Mechanical Laboratory and equipment.

Messrs. John D. Clarke and Michael Fahey appeared before the Board, entering into contract for the building of the Mechanical Laboratory, according to the terms required by the Board, with its representatives, and giving guarantee bond for the sum of \$3,000, with approved securities.

Section 2 of the by-laws relating to time of November meeting was suspended, and the Board then adjourned to meet on the 13th day (Thursday), of November next, at 8 A.M.

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COLUMBUS, O., *September 17, 1879.*

At a called meeting of the Board of Trustees on this date, Messrs. Godfrey, Johnston, A. Ellis, and Anderson were present.

A general inspection of the buildings, farm, and river improvement was made.

The report of S. W. Robinson's visit through the colleges and manufactories of the East was read, and the Executive Committee authorized to proceed in the equipment of the Mechanical Laboratory according to the suggestions of Prof. Robinson.

*Ordered*, That a new record for registering the class standings be prepared under direction of Mr. A. Ellis.

*Ordered*, That shelves for display of a collection of shells, left by Mr. Comly in the University, be constructed in Prof. Tuttle's room.

*Ordered*, That new window curtains be purchased by the Executive Committee for Prof. Townshend's room.

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COLUMBUS, *November 13, 1879.*

Pursuant to the adjournment of meeting held July, 1879, the Board of Trustees held their regular meeting on this day, beginning at 8 o'clock A.M.

Present—Messrs. Johnston, Jamison, Anderson, Alston Ellis, S. H. Ellis, and the President, T. J. Godfrey, in the chair.

The minutes of the meeting of July 18th and September 17th were approved.

A report of the proceedings of the Executive committee since the July meeting of the Board was read and approved.

On motion,

*Resolved*, That the matter of insurance on the Mechanical Laboratory building and contents be referred to Executive committee with power to act.

Carried.

The annual report of the Board was presented by the Secretary and approved.

The report of the Treasurer was presented and referred to the Finance committee to report upon during their meeting.

On motion of Mr. A. Ellis,

*Resolved*, That the income of the Endowment Fund (so called), held in trust by the State, and all income from whatever source not otherwise specifically directed, be appropriated for the support and maintenance of the University for the ensuing fiscal year, and for such other purposes incident thereto as the Board of Trustees may from time to time determine; provided, that the use of the income (\$20,547.00) of so much of the fund (\$342,450.80) as was derived from the proceeds of the land scrip donated by act of Congress July 2, 1862, be limited to the restriction of the second clause of section 5 of said act of Congress; and provided further that the net proceeds of the sale of lands of the Virginia Military District (when the account thereof is closed) be placed to the credit of the irreducible fund of the University in the State treasury, as required by section 6 of an act of the General Assembly of Ohio, passed April 3, 1873, page 173 of the Eighth Annual Report.

Carried.

*Resolved*, That the treasurer of the University be directed to close the appropriation account as shown upon page 86 of the last annual report as his general statement No. 1, as the detailed statement of receipts and disbursements made annually sufficiently set forth the financial condition of the University as required in his duties and in the "mode of accounting" provided for in section 19 to 24 of the by-laws.

Carried.

The reports of the President and members of the Faculty were approved, with instructions to incorporate such portions in the annual report to be printed, as the President and Secretary might deem proper.

*Ordered*, That \$100 be and is hereby appropriated for the purchase of sulphureted hydrogen gas apparatus.

*Ordered*, That the sum of \$240 paid out of the appropriation for Mechanical Laboratory and Equipment for the purchase of new boiler in engine room be refunded for other use to the said appropriation, and the amount made chargeable to the general interest fund.

*Resolved*, That the matter of building horse-sheds, target-screens and sheds for the gun-carriages, the putting in of telephone and repairs of bath-room in the dormitory be referred to the Executive committee with power to act.

Carried.

Captain C. A. Barton made a report concerning the sale, and other matters relating to the Virginia Military lands since June, 1879; which was received and ordered to be filed.

*Ordered*, That the salary (\$300), and the expense account (\$395.03) of C. A. Barton be paid.

The following preamble and resolutions were adopted:

**WHEREAS**, evidence has been produced to satisfy the Board that the notes of B. M.

Reno, for \$21.75; James Porter, for \$25, and Joseph Shivey, for \$25, have been paid to W. H. Leete, a former agent of the Board; therefore,

*Resolved*, That said parties are hereby relieved from payment of said notes, and that the same be canceled, but held against said agent until it is shown that he has accounted to the University for the same.

WHEREAS, F. U. Beebe purchased 800 acres of the Virginia Military lands from the University, situated in Scioto county, Ohio, upon which, at the time of his purchase, squatters were known by him to be; and

WHEREAS, said purchaser has, as he claims, incurred expenses in ejecting said squatters, and was successful in his proceedings in ejectment, and now claims the right to reimbursement of costs, taxes, etc., therefore

*Resolved*, That, in the opinion of this Board, said claim for reimbursement is not a legal claim against the University, and is therefore rejected.

On motion, a recess was taken until 9 o'clock, A.M., November 13, 1879.

Board met at the hour appointed, all the members present except T. E. Miller, who was absent in Europe.

*Ordered*, That the Secretary purchase for the library the published volumes of the American Jersey Cattle Club Register.

A communication from Mr. Dillon, janitor, concerning his duties as janitor, was received and ordered filed; whereupon the following resolutions were passed, to-wit:

*Resolved*, That Mr. Dillon be continued as janitor of the Ohio State University on the following terms and conditions:

1. He shall be responsible for the general and special duties now devolving upon him, and shall receive \$1000 per annum or \$83.33 per month for such services as well as such other services as is specified in his letter of November 12, 1879, to this Board.

2. He shall employ a competent assistant, the same to be approved by the Executive committee, and shall pay him for all service he may perform as such assistant.

3. The right to dismiss said Mr. Dillon, or said assistant, or both, shall be vested in the Executive committee of this Board, who are hereby empowered, in case of the dismissal of said janitor, to make a temporary appointment to fill the position thus made vacant.

4. It is made the duty of the janitor, or the assistant under his direction, to be in or about the University buildings at all times, day and night, and exercise a watchful care over the same.

The reports of the Farm Committee and Farm Superintendent were read and approved.

The Finance Committee, to whom was referred the report of the Treasurer, submitted the following, which was approved:

The accounts and vouchers of the Treasurer have been examined and compared with those shown in the Secretary's record, and found to be correct. An examination shows that the balance reported by the Treasurer is on deposit in the National Exchange Bank,

and subject to his order. The report of the Treasurer is correct in every particular, and its acceptance is hereby recommended. Signed,

ALSTON ELLIS,  
STEPHEN JOHNSON,  
*Committee on Finance.*

On motion, it was resolved to proceed to the election of officers by ballot; whereupon Stephen Johnston was elected President of the Board; James B. Jamison, Vice-President; Albert Allen, Secretary; H. S. Babbitt, Treasurer; J. H. Anderson, T. E. Miller, and Alston Ellis, Executive Committee; James B. Jamison, S. H. Ellis, and T. J. Godfrey, Farm Committee; Alston Ellis, T. E. Miller, and T. J. Godfrey, Finance Committee.

The Secretary was directed to have the bond of the Treasurer filed.

A communication from Mr. Thorne, asking increase of salary, was laid on the table.

The salary of Treasurer was fixed at \$400, and of the Secretary at \$865, including same services, in addition to his ordinary duties, as were required last year.

On motion,

*Resolved*, That Prof. McFarland be requested to make a complete survey of the lands of the University, including the buildings located thereon, and the subdivisions thereof, into fields, so as to present an accurate birds-eye view of said land, and the subdivisions thereof, properly numbered, and that he procure a suitable stone for lithographing and printing said view.

The matter of opening a road on the north side of the Farm was referred to the Executive Committee, with power to act.

On motion,

*Resolved*, That the contract between this Board and W. H. Gaber, and W. E. Orr, concerning the discovery of certain Virginia military land, made January 7, 1879, be and is hereby rescinded, they having failed to comply with the terms of said contract.

Carried, and Secretary notified to instruct them.

Moved, that when this Board adjourns, it be to meet again on January 8, 1880, at 9 o'clock A.M.

Board adjourned.





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TENTH ANNUAL REPORT

OF THE

BOARD OF TRUSTEES

OF THE

OHIO STATE UNIVERSITY,

TO THE

Governor of the State of Ohio.

FOR THE YEAR 1880.

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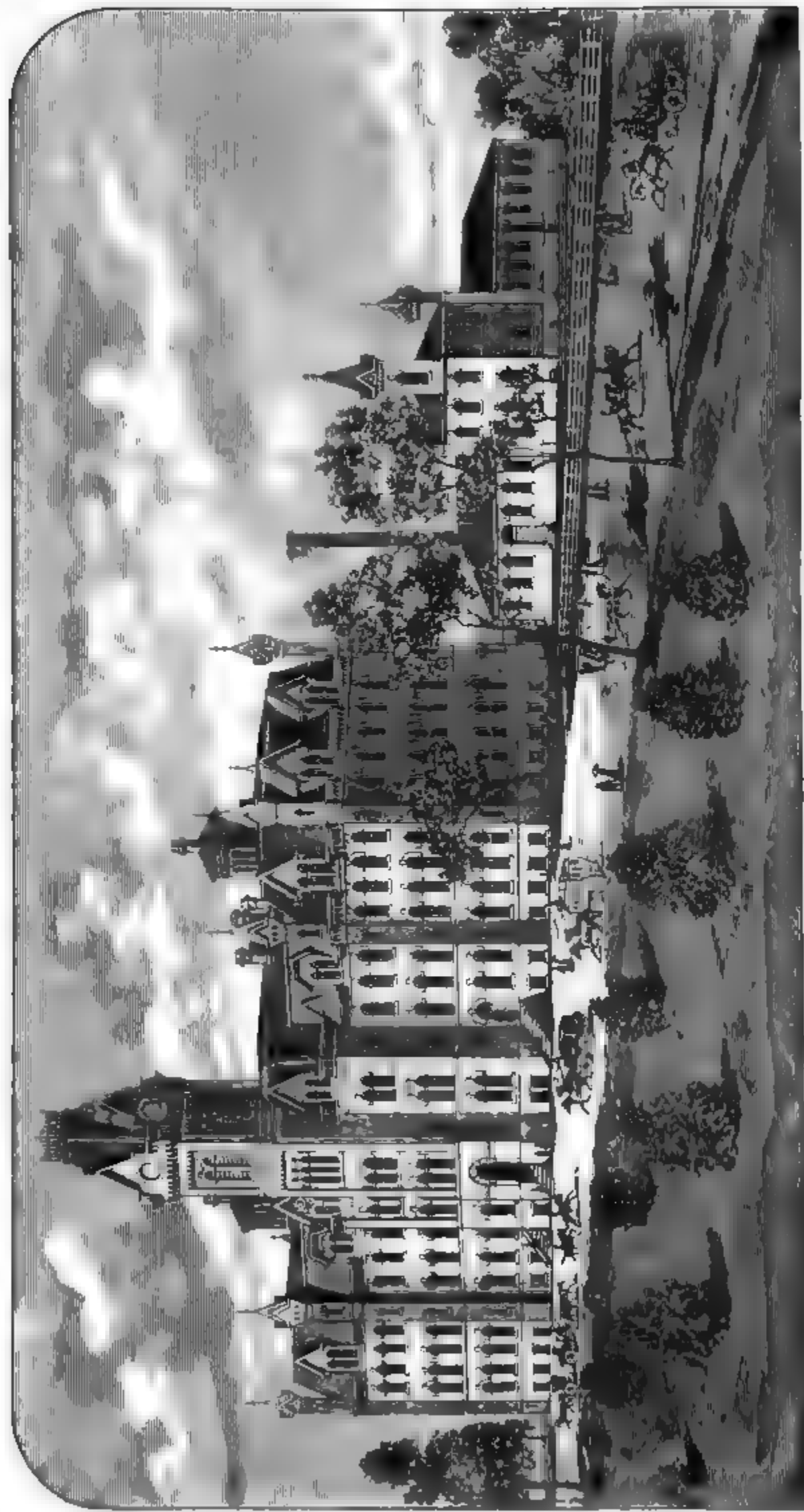
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OHIO STATE UNIVERSITY.

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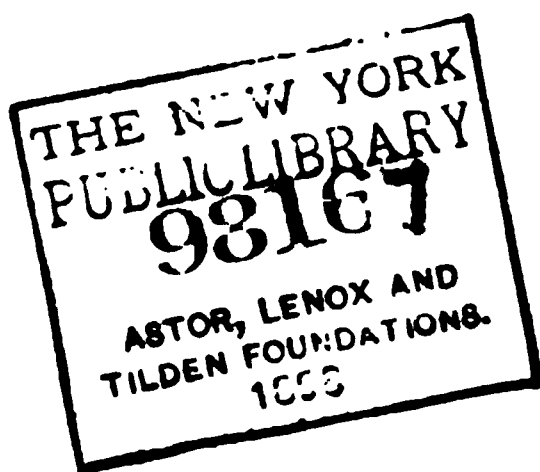
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COLUMBUS, OHIO:

G. J. BRAND & CO., STATE PRINTERS.

1881.

77.00



BOARD OF TRUSTEES.

HON. J. H. ANDERSON.....	Columbus, Ohio.
ALSTON ELLIS.....	Sandusky, Ohio.
HON. THOMAS J. GODFREY.....	Celina, Ohio.
S. H. ELLIS.....	Springboro, Ohio.
HON. STEPHEN JOHNSTON.....	Piqua, Ohio.
HON. JAMES B. JAMISON.....	Cadiz, Ohio.
T. EWING MILLER.....	Columbus, Ohio.

OFFICERS OF THE BOARD:

T. EWING MILLER.....	<i>President.</i>
ALBERT ALLEN .....	<i>Secretary.</i>
HENRY S. BABBITT.....	<i>Treasurer.</i>

EXECUTIVE COMMITTEE:

J. H. ANDERSON, STEPHEN JOHNSTON, ALSTON ELLIS.

FARM COMMITTEE:

JAMES B. JAMISON, S. H. ELLIS, T. J. GODFREY.

FINANCE COMMITTEE:

ALSTON ELLIS, T. J. GODFREY, S. H. ELLIS.



# FACULTY.

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EDWARD ORTON, PH.D.,  
President, and Professor of Geology.

SIDNEY A. NORTON, PH.D., M.D.,  
Professor of General and Applied Chemistry.

JOSEPH MILLIKIN, A.M.,  
Professor of English Language and Literature, and of the French and German Languages.

NORTON S. TOWNSHEND, M.D.,  
Professor of Agriculture.

R. W. MCFARLAND, A.M.,  
Professor of Mathematics and Civil Engineering.

ALBERT H. TUTTLE, M.Sc.,  
Professor of Zoology and Comparative Anatomy.

LUIGI LOMIA, M.Sc.,  
First Lieut. Fifth Artillery, U. S. A.; Professor of Military Science and Tactics, and Adjunct Professor  
of Mathematics.

S. W. ROBINSON, C.E.,  
Professor of Physics and Mechanics.

JOSIAH R. SMITH, A.M.,  
Assistant Professor of the Latin and Greek Languages.

NAT. W. LORD, M.E.,  
Assistant Professor of Mining and Metallurgy.

JOHN T. SHORT, PH.D.,  
Assistant Professor of History and Philosophy.

WILLIAM A. MASON, JR.,  
Assistant Professor of Industrial Art.

ALICE WILLIAMS,  
Assistant in Department of Modern Languages.

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JOSIAH R. SMITH, A.M.,  
Librarian.

Miss S. GLOVER,  
Assistant Librarian.

*To His Excellency, CHARLES FOSTER,*

*Governor of Ohio :*

SIR: According to the requirements of law, I have the honor to transmit herewith the Tenth Annual Report of the Board of Trustees of the Ohio State University.

Very respectfully, your ob't serv't,

ALBERT ALLEN,

*Secretary of the Board.*

## REPORT OF TRUSTEES.

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It is an evidence of a liberal, progressive spirit upon the part of a State to provide and maintain a great Institution of Learning, free to all her citizens. The honor, however, of such a deed can never become illustrious until its beneficial results can be seen and felt in the varied pursuits of her people. The Ohio State University, with her valuable farm and buildings, her endowments, equipments, and provisions for broad and liberal instruction, can only work out the destiny so hopefully projected in her establishment, when the channels or avenues through which she is to disseminate her instructions become available. The adaptation of a piece of machinery to the performance of a certain work may be admirable, and the capabilities of the mechanic who operates it be unquestioned, yet in the absence of proper material upon which to operate, the skill of the mechanic, and the machine (so far as the purpose for which it was designed is concerned), are both valueless. The presence of this material in the educational work-shop of a well-equipped institution, under the intelligent guidance of a trained corps of instructors, is *the condition* upon which its utility and value depend in giving intelligence, power, and wealth to a people. It is, therefore, with great pleasure, that the Board can report an unprecedented increase in the number of students at the beginning of the present term, there being 235 in actual attendance. Of these, 105 are new students, the whole number representing 61 counties in Ohio, and 5 from other states.

This encouraging influx, the Board feels, may be ascribed to placing the institution upon a more emphatic basis, as regards *industrial* education; a fuller appreciation, and more enlarged views upon the part of the people, as to the advantages of skilled labor of all kinds; and to a wider publication of the attractive features belonging to the institution. In seeking to bring about this result, the Board, realizing the responsibility of the trust, has spared no pains to ascertain the preponderance of public opinion regarding the range of instruction which should be given in the University. Conference with leading men through the State, engaged in different pursuits, and interested in such matters, revealed the fact that there was no concurrent sentiment on the subject, but that each, almost without exception, manifested a preference for the aggran-

dizement of that special department most nearly related to his individual vocation. This very natural partiality for one's own calling, and a failure to appreciate the merit of other professions and occupations, have in some instances provoked unwarranted prejudice against, and opposition to the college, and which, if yielded to, would dwarf the growth of the institution to limits utterly too narrow for a great State enterprise looking to the good of all classes. The wisdom and clear foresight of Congress were never more fully indicated in any enactment looking to the interest and well-being of a people in their diversified pursuits, than when it determined and declared concerning this matter that, "the leading objects shall be without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to *agriculture* and the *mechanic arts*, in such a manner as the legislatures of the states may respectively prescribe, in order to promote the *liberal* and *practical* education of the *industrial classes* in the several *pursuits* and *professions of life*."

The Board cannot but believe that the present instances of popularity and prosperity are but the beginning of that success which the institution will attain in a few years, under wise administration of its affairs, and a firm adherence to this impartial legislation.

Without calling attention to the condition and course of instruction taught in the other several departments of the University, organized several years ago (all which will appear in the reports of the President and Professors), allusions may be pertinently made to the

#### ART DEPARTMENT.

Heretofore instruction in Free-hand and Mechanical Drawing has been given. The new Art Department is projected upon a broader *utilitarian basis*, and contemplates instruction not only in drawing and painting, but also in designing, modeling, engraving, etc. It is not designed to make it a school for the culture of *liberal* or *fine arts*, so much as for *technical* instruction in the *useful arts*; to make the *artisan* rather than the *artist*; and to impart that form of knowledge essential to skill and taste in the architect, the bridge and ship-builder, the mason, the machinist, the engraver, the cabinet-maker, the decorator and designer of textile fabrics, and every kind of artisan in the catalogue of human industries.

Our costliest and largest importations of manufactured articles from foreign countries, and especially France, do not derive their chief value from either the quality or quantity of the raw material of which they are composed, but from the amount and character of the *tasteful* and *skilled*.

Labor employed in their production. It is this skill that increases the value of labor so greatly, and constitutes in countries poor in soil and in natural production, a source of immense *material* wealth. Here, in Ohio, where the natural productions exist in such abundance, upon which the laborer subsists, and upon which he operates, this element of material wealth should be greatly conserved.

If, as has been wisely said, that "education is the fitting of youth for the occupations of adult life, and the duties of good citizenship," and that the uniform demand for the products of *skilled* labor, in our markets, is already turning our industries in that direction, no scheme of education can be regarded as complete, that does not embrace art culture.

Mr. Wm. A. Mason, of Cambridge, Massachusetts, a graduate of the highest standing in the Massachusetts Normal Art School, has been called by the Board to take charge of this Department as Assistant Professor. The necessary equipment is being provided as rapidly as possible.

The views and purposes of the Board touching the treatment of Agriculture may be understood from the following extracts taken from open letters, addressed by President Johnson to Professor Townshend. In his letter of June 24, 1880, he says:

The Trustees of the University, after mature consideration of the subject, on yesterday, determined to restore you to the entire control and supervision of the Agricultural Department of farm management, including especially experimental tests upon the grounds connected with the University so well adapted to that purpose. I am authorized by the Board of Trustees, with great unanimity, to say that in thus restoring you to this responsible position that it is the earnest request of the Board that the department of Agriculture in the Ohio State University be upheld and pushed so as to reach the highest point for teaching Scientific Agriculture to which the subject and means within your reach shall be attainable.

At your request the Board has made an appropriation to aid you in the payment of traveling expenses to enable you to examine other institutions and to meet other men connected with scientific agriculture in order to qualify you more especially for this work.

You are also aware that the Trustees have just made an appropriation of \$1,000 for the purchase of a model of a horse for use in your department, to enable you to teach Veterinary Surgery and Medicine with greater facility.

Be assured that the Trustees fully appreciate the immense value of Scientific Agriculture throughout our entire country, and especially in the State of Ohio, the commercial gate-way between the Atlantic and Pacific States.

It is with very great pleasure that the Trustees recognize the determination of the farmers of Ohio to demand that your department shall be brought up abreast with the other departments of science and learning now so well carried forward in the University.

If, by the adoption of this resolution of the Board, the additional duties imposed should make it proper to relieve you from teaching botany, proper (not economic), in order to give your undivided time and energies to the department especially confided to your care, the Trustees are ready and anxious to afford you every facility to enable you to bring up your department to the highest point of usefulness contemplated in the establishment of the college.

In a subsequent letter he says:

I have just read with pleasure a communication written by you, published in the *Ohio State Journal* of the 1st instant, giving an account of a meeting of Professors of Agriculture representing several colleges of the Western States, at the Illinois Industrial University, on the 22d, 23d and 24th ultimo. The subjects discussed at this meeting, as given by you in the article published, impress me with the importance of more thorough and systematic work in the Agricultural Department of the Ohio State University, and by reason thereof I have no doubt you will be able to submit plans and recommendations which will be of lasting and substantial value in the future management of the Agricultural Department of which you are the head.

I am fully aware that in thus calling upon you for detailed plans and suggestions, to be submitted to the Trustees, that the subject will require much consideration, careful study, and patient investigation; but the time has come, in my opinion, when a thorough policy and systematic experimental tests, in connection with your department, and the farm under your control, must be adopted, and to be successful must, at all times, challenge criticism from intelligent farmers of Ohio, and elsewhere, as to its management.

The report, submitted by Dr. Townshend on his return from the visit alluded to above, contains many valuable suggestions, which will be carried into practical operation in that important branch of education.

The third course of free lectures "On the Application of Science to Agriculture," for the benefit of farmers, will begin January 11, 1881. These lectures have been well attended and favorably received.

The equipment of the mechanical laboratory embraces all the machinery now necessary to the practical training of young men fitting themselves for the work of the mechanical engineer. The number now receiving instruction and training here is 21. No expenditure of money upon the part of the State is calculated to yield a more satisfactory return than that employed in building and equipping this laboratory. The building is admirably adapted to the object contemplated, admitting that orderly arrangement of work-benches, tools, vises, and other machinery of all necessary kinds, demanded alike by good taste and system in our well-conducted work-shops.

The amplification of this department has required so greatly the attention and energies of Professor Robinson, who is also in charge of the school of Physics, as to render the appointment of a separate Professor to the chair of Physics, imperative. The Board, anticipating the fulfillment of Prof. T. C. Mendenhall's engagement with the Government of Japan, and being advised of his willingness to return to his former field of labor, elected him to the Professorship of Physics; his term to begin with the opening of the College-year in September, 1881. Professor Mendenhall held this position in the University from its organization until June, 1878, with signal ability, and great advantage to the State, and his re-appointment has met with great favor.

A superior equatorial telescope, with an aperture of five inches, magnifying from 50 to 300 diameters, has been ordered for the outfit of the Mathematical Department, and the entire amount of chemicals needed during the coming year has been purchased and received from Europe. Under the provisions of the general government these articles can be imported for the use of colleges, free of duty, and as it is desirable to furnish the students with laboratory material, at as low a cost as possible, the direct importation was authorized through Professor Norton.

The act making *military drill optional* with the students, was repealed by the last Legislature, and it is now, by action of the Trustees, made *compulsory* on all male students connected with the University, with the exception of such as are physically unfitted, such as may be excused by the President of the University upon reasonable grounds, and the regular members of the Junior and Senior classes. From 140 to 145, inclusive of the band, are now in the drill.

A room in the west end of the main building, corresponding to the one occupied in the east end by the Aleyone Society, has been fitted up for the Horton Society. Both have been handsomely furnished by their respective memberships, and the large attendance upon the regular meetings indicate the deep interest felt in these important auxiliaries to student-culture and discipline.

The large dormitory, which is under the control of President Orton as a club-house for students, was occupied last year by thirty-three young men. The advantages of a cheap rate of board to many good students whose circumstances require strict economy, and the prevailing good order observed throughout the past session by the club, has rendered the continuance of the building for this purpose very desirable. To this end a few additional rooms have been partially furnished, and all the old ones rendered more comfortable and attractive. All the furnished rooms are now occupied, there being forty-seven students in the club.

The sales of *Virginia Military Lands* during the year will not aggregate as much as during the previous year, owing to the fact of a large sale of over 11,000 acres in Scioto county to a single purchaser last year, which swelled the amount much beyond the annual sales of other years. With the return, however, of business prosperity, and a surplus of unemployed capital offered at a low rate of interest, the sale of land, in small parcels, has been steadily going on, and the payment on the sales, as well as on notes past due on previous sales, have been more promptly made.

Under the terms and conditions fixed by statute, 12,544<sup>23</sup>/<sub>100</sub> acres have been sold since November 15, 1879. The cash payments made on these, and on notes given by purchases concluded prior to that date, amount, since November 15, 1879, to \$7,285.08.

In Chapter 13, Section 8433, Revised Statutes, it is provided that "the proceeds of the sales of all such lands, after payment out of the same of all the necessary expenses of survey and sale, shall be certified into the treasury of said State as provided by law, and the same shall be placed to the irreducible fund of said college, and shall form a part of said irreducible debt of the State, on which the interest shall be computed semi-annually, and paid to said college as may be ordered by the Board of Trustees; and they shall annually report to the Governor a detailed statement of receipts and disbursements in the execution of trusts created under the provisions of this act."

Although all of these lands are not yet sold, the Board thought proper, at its meeting on the 17th of June last, to order, "that, in pursuance of Section 8433, Revised Statutes of Ohio, the Treasurer be and is hereby instructed to certify into the Treasury of State, to be placed to the credit of the irreducible fund of the University, twelve thousand and seventy-three dollars and twenty-eight cents (\$12,073.28), being the net proceeds derived from the sale of *Virginia Military Lands*, as shown by the Treasurer's statement of said account November 15, 1879, page 85 of the Ninth Annual Report of the Ohio State University."

By direction of the Board, the Secretary has prepared a register, containing a complete detailed statement of the *Virginia Military Lands*, showing the number of lots, number of acres in each lot, the appraised value per acre, and, if sold since Nov. 15, 1878, to whom and at what price; also, the cash payments, and the number and amount of notes in the hands of the Treasurer. and when payable; said book to be kept for reference and further entry as may be demanded. The earlier transactions in these lands gathered, as some of them were, from unofficial sources, may not be entirely correct, but those relating to transac-



tions occurring since the appointment of the present Board are deemed strictly accurate. Since the 1st of January, 1878, 26,715 $\frac{50}{100}$  acres have been sold for the sum of \$22,319.08, while the receipts from sale of these, and on notes for purchases made previous to that time, were \$16,712.41. There yet remains of discovered lands 10,751 $\frac{26}{100}$  acres unsold. Some few lots have been recovered by suit, on which the cash payment was made, but the purchasers were unable to pay the notes given by them. No new discoveries to any great extent have been made.

The General Assembly, on the 27th of February last, made an appropriation of \$5,150.90 "to reimburse the Ohio State University moneys expended in paying the reasonable and necessary expenses of the Trustees while engaged in the discharge of their official duties." This amount represented the entire expenses of the Trustees from the initial date (1870) of the University to November 15, 1879. Additional appropriations, made on the 15th of April, are as follows: For "expenses of Trustees," \$350; for farm improvements and stock, \$1,500; for supplies for Mining Department, \$500; for wall and table-cases in the Geological Museum, \$1,000.

The support furnished through these and other appropriations of the previous session have enabled the Board to elevate the status of the University in many respects.

For a more extended and detailed statement of the condition and management of the University, your attention is respectfully invited to the accompanying reports of the President and Professors, the Farm Superintendent, Treasurer, and a transcript of the proceedings of the Board during the fiscal year.

ALBERT ALLEN, *Secretary.*

REPORT OF THE PRESIDENT.

HON. STEPHEN JOHNSTON,

*President of Board of Trustees of Ohio State University:*

DEAR SIR: I herewith present my eighth annual report, which covers the calendar year that ends November 15, 1880. The fiscal year of the College, by which we have been governed thus far in making our reports, does not match very well with the collegiate year, as it includes parts of our college terms, and of two college years. On this account, it is sometimes objected to our reports, and especially to our catalogues, that the actual state of the College cannot be made out from them. It does not seem to me that there has been any good foundation for this complaint, for the statements made by the several Professors as to their respective departments have always been so detailed and explicit, that the careful reader could have no difficulty in understanding the condition of the several parts, and thus of the whole institution. To remove, however, such grounds of complaint, I will supplement the statements that I have been accustomed to make by one or two more, that will leave no room for ambiguity or uncertainty as to the attendance and distribution of work at the University during the time covered by the report.

During the four terms included in the year ending November 15, 1880, there have been three hundred (300) students in the institution. The names of these students appear in the catalogue that follows the report.

The attendance during the three terms of the last college year, (September 17, 1879, to June 23, 1880,) was as follows:

Fall term—September 17 to December 23.....	195
Winter term—January 8 to March 31 .....	181
Spring term—April 8 to June 23.....	162
— — — — — — — — — —	
Whole number of students during the year .....	217

A summary of the class lists of the several departments is appended, which indicates the distribution of the students among these departments. The amount of work done in the several subjects of study named is not, however, necessarily proportioned to the number reported in the

departments, for the reason that some of the classes last but a single term, while others are maintained through the year. It is, also, to be observed, that the largest classes in an institution like this are naturally the lowest classes, and the departments that have the preparatory work to do must, consequently, report the highest enrollment. The departments are named in the order of their establishment:

Geology .....	54
Chemistry.....	99
Modern Languages.....	90
Agriculture and Botany .....	61
Mathematics and Civil Engineering.....	156
Zoology .....	113
Military Science and Mathematics .....	25
Physics and Mechanics.....	72
Latin and Greek.....	87
Mining and Metallurgy.....	30
History and Philosophy.....	150
Drawing .....	75

The number of students regularly admitted to the several departments of the College, during the present term, is .....	235
Of this number, there are, at the present date, on the College roll.....	228

Nearly one-half of this number are now in the College for the first time, and it is gratifying to note that nearly fifty of the new students were able to enter the Preparatory Department without examination, by availing themselves of high school diplomas and teachers' certificates of good grade. The waiving of entrance examinations upon such proofs of scholarship and maturity is a recent offer of the College to the high school graduates and teachers of the State, but it seems to have been a timely and acceptable offer, and the results, so far, are very satisfactory. The 228 students named above are distributed at present among the several departments of the College as follows:

Geology—President .....	102
Chemistry—Prof. Norton .....	80
Modern Languages—Prof. Millikin; assisted by Miss Williams .....	154
Agriculture and Botany—Prof. Townshend .....	41
Mathematics and Civil Engineering—Prof. McFarland, assisted by student .....	133
Zoölogy—Prof. Tuttle .....	30
Military Science, Mathematics and Elocution—Prof. Lomia.....	45
Physics and Mechanics—Prof. Robinson .....	21
Latin and Greek—Prof. Smith; assisted by student.....	105
Mining and and Metallurgy—Prof. Lord.....	5
History and Philosophy—Prof. Short.....	20
Drawing—Free-hand and Mechanical—Prof. Mason.....	55

The disparity in the class lists of the several professors arises partly from the fact that the large classes in the preparatory department are not reached by all in the first term of the year. The work of the year, as shown on a preceding page, is a better measure, but even this last year had abnormal elements in it, owing to recent changes in the curriculum.

There are sixty-one counties of the State represented in our present catalogue.

The growth of the College is shown in part by the number of students present in it at the date of my several annual reports. It was opened for the reception of students in September, 1873.

In November, 1873, there were 27 students, from 10 counties.

"	1874,	"	59	"	22	"
"	1875,	"	99	"	39	"
"	1876,	"	120	"	42	"
"	1877,	"	211	"	50	"
"	1878,	"	198	"	52	"
"	1879,	"	195	"	56	"
"	1880,	"	235	"	61	"

The statement was just made that the growth of the College could be seen in part by the tables that have been given, but it is to be distinctly borne in mind that the success of an institution like this is not to be measured only or chiefly by the number of students in attendance. The real and proper standard is the kind and amount of training that it gives to those who complete its courses of study, and who thus make full and fair proof of the work done in its several departments.

There was a large increase of students in 1877, but this increase was purchased in part by an unwise lowering of the standard of admission for that year, and the College was by no means strengthened in proportion to the increase. For all legitimate college purposes, the institution was much stronger in the two years succeeding 1877. The increase of the present year is not open, however, to any such criticism. The large body of students that entered the University in September last, is, on the whole, much better prepared for college work than the entering class of any former year. I assure you that we thoroughly appreciate the desirability on every account of having our halls well filled with properly prepared students, and we do not spare pains in seeking to attract such students to us, but to gather here a body of young people that are obviously and confessedly unprepared for college work of any grade, seems to us in all ways inexpedient and unwise. There has never been a year in our history in which we could not have gained a large increase in

numbers by simply dropping all entrance examinations and abolishing all standards of scholarship, but to do this, would, in our judgment, be a gross abuse of our foundation and a crime against education.

The past year has been a fairly successful one in every department of our college work. Good progress has been made in recitation-room and laboratory, as will be seen by the professorial reports. The changes announced in my last report, in the courses of instruction that lead to the degrees of the University, have been consummated, and they are already bearing good fruit. Our classes are stronger, and our students are held to better work. We have experienced a certain amount of confusion in effecting the change, as a matter of course, but this is already disappearing, and another year will find a much more effective organization of college work than we have attained hitherto.

The college order leaves little to be desired. Our students seem to recognize and to accept the responsibility which their large liberty entails, and in their relations to the faculty, to each other, and to the community, they have borne themselves honorably and well. It cannot happen, of course, that professor and pupil will see all questions pertaining to college life from the same point of view, but we have been happily spared, so far, those unfortunate collisions between faculty and students that, whenever they occur, interrupt college work and embitter college life.

The two dormitories are in good condition. Both are full, occupied by students who are glad to avail themselves of this means of reducing their expenses, and who cheerfully recognize the obligation that such use imposes to preserve the property and guard the good name of the college by the order to which they hold themselves. This self-imposed maintenance of order makes the dormitories a source of strength and credit to the institution.

The Literary Societies of the college are prosperous and effective in a high degree. The discipline that they impart is a valuable element in the student's education. Both societies have approved their loyalty and zeal during the last year by beautifying and refurnishing their rooms at large expense. I am glad that the Board of Trustees found it possible to express its interest and approbation by a donation to each society.

The Mechanical Laboratory has been completed and equipped during the year covered by the present report. It makes a signal addition to our educational facilities, and promises to be widely appreciated. A goodly number of young men are already pursuing the studies that lead to the degree of Mechanical Engineer. Some of them have been at-

tracted from other States by the advantages which we are now able to offer.

The Mining Laboratory has been kept busy with the chemical work that the State laws impose upon it. A large number of analyses has been made, and many questions have thus been answered as to the practical values of Ohio minerals. It is greatly to be regretted that much of this valuable labor is lost through the lack of any system by which the results can be extended to more than the individual specimen analyzed. This ground of complaint applies especially to the bungling and inoperative law in regard to the analysis of artificial fertilizers, which still holds its place among our statutes. If the agricultural interest needs protection in this respect, it will be easy to secure it by appropriate legislation, but the present law holds out a promise of protection that it does not keep.

I speak of these two laboratories in particular, because they are the two departments of the institution that have been established and equipped by State aid.

Few changes are to be noted in the organization of the faculty during the present year, but one change of great moment I take special pleasure in recording. The Trustees have invited Prof T. C. Mendenhall to resume his connection with the institution, and Prof. Mendenhall has promised to do so at the opening of the next college-year. He will return as Professor of Physics, the subject of Mechanics having grown, through the newly-equipped Mechanical Laboratory, into the full proportions of a department, which is to remain in the competent hands of Professor Robinson. The return of Professor Mendenhall will, beyond question, be a source of great strength to the institution.

Mr. Thomas Mathew, who had served the college with great fidelity for six years in the capacity of Instructor in Free-Hand and Mechanical Drawing, retired at the close of the last academic year. He takes with him the thorough respect and cordial good-will of the Faculty, with whom he has worked so loyally and faithfully. His place is filled by the appointment of Mr. W. A. Mason, a graduate of the Normal Art School of Boston. The statement of this fact is equivalent to saying that Mr. Mason has enjoyed the best advantages for learning the theory and practice of industrial art to be found in this country. He has made a successful beginning of his work.

By act of the Legislature at its last session, the Section in the organic law of the University, which forbade the making of Military Drill compulsory, was repealed. At its June meeting, the Board took action

upon the subject, making drill compulsory upon the male students of the institution, with the exception of the regular members of the Senior and Junior classes, and such other students as should be excused by the President on reasonable grounds. I have excused about 30 students, the grounds of excuse counted reasonable being certificates of physical disability from physicians, conscientious scruples on the part of parents, and in some cases, want of means to provide the uniform. An efficient system of military drill is provided for the remainder of the young men of the institution.

The second course of popular lectures on Agriculture was given in January last. It occupied three weeks, and was fairly successful in all respects. The attendance, however, was but little increased above that of the previous year. It is believed that the state of the roads in Central Ohio at this time prevented many farmers from coming in to the lectures, who would otherwise have done so.

A third course has been arranged to occupy ten days in January next. More cordial testimony, as to the interest and practical value of the lectures, cannot be asked, than has been given by the intelligent farmers that have composed the classes thus far, but the number in attendance ought certainly to be largely increased.

A system of county institutes for farmers, lasting for two or three days, has been recently established under the direction of the State Board of Agriculture. To the sessions of these institutes, Professor Townshend can render invaluable assistance, if provision can be made by which he can occasionally be released from college duties, to take part in this outside instruction. His special qualifications for such a line of work are universally recognized, and I believe that the college can serve the agricultural interest of the State and itself at the same time, by giving him as much freedom as possible in this respect. I hope that definite provision will be made for this service.

I am glad to note the growing interest of the farmers of the State in this institution, and I sincerely regret that any representatives of this great industry, see occasion for continued criticism upon the organization and management of the University. The work that has been done here so far, has been done in good faith and with a sincere desire to comply with the letter and the spirit of the Land Grant of 1862, upon which the college is founded. Each of the Land Grant colleges is obliged to construe for itself the terms of the organic law. There are, it is true, many self-constituted interpreters of the act, who can settle beyond all question its scope and aim, but unfortunately they do not agree with each other, and the questions still remain open ones.



There are two types of institutions founded on the Land Grant, represented on the one side by Cornell University of New York, and the Illinois Industrial University, and on the other, most honorably represented by the Michigan Agricultural College. The former class count agriculture *one* of the great industrial interests of society which they are specially set to serve; the latter practically counts it the *only* one. There are honest differences of opinion as to which carries out best the letter and spirit of the law on which both classes of institutions are founded. I will not go over the argument which has been worn threadbare already, but I will repeat the opinion, that I have often had occasion to express, that the first-named institutions are furnishing the kind and scope of education that the Land Grant contemplated. No second-rate or insignificant place is given to agriculture in these institutions, but each has, in addition to a farm manager, a professor of Agriculture, a professor of Botany and Horticulture, a professor of Veterinary Science, and the first, at least, has a professor of Agricultural Chemistry. According to the testimony of our leading agricultural paper, the most valuable series of agricultural experiments yet made in this country, has recently been contributed by Cornell University.

The difference between these institutions and our own, lies in the fact, that generous appropriations from the State and munificent gifts from individuals have enabled them to make the expansion named above in these practical directions, while our own institution, in default of such aid, has been obliged to limit itself to the common foundations of a liberal and practical education for the industrial classes, which shall fit them for the various pursuits and professions of life.

I am decidedly of the opinion that it is the duty and policy of this institution to expand as rapidly as possible the agricultural side of the University. If the Board agrees with me in this view, its task will be to devise ways and means for this extension.

I hope that the Board will see its way to an appointment that was foreshadowed at the September meeting, of an assistant professor in Botany and Horticulture. I should look for a young man who has the practical side of the department well in hand, and who could superintend that part of the farm-work that comes under this head. The addition of an assistant professor in Agricultural Chemistry would bring up this department to the full measure of reasonable demands. And further, if there should be established a lectureship on Entomology, I believe that the institution would be able to meet fully and fairly the peculiar claims of agriculture, and I believe that all this



could be accomplished without sacrificing the breadth and balance that has always been insisted on and maintained in the institution.

A subject in which the University is interested to some extent, was brought up in the Legislature near the end of the last session. A preliminary enquiry was proposed as to the possibility, the desirability and the practicability of effecting a union of the three institutions that are known as State Universities. Inasmuch as this institution is the strongest of the three, and has already a vigorous and growing life, it might be supposed that the enquiry originated in our ambition and our interest, but this was not the fact. I am not at all sanguine that any union is practicable, but there are many that believe that the interests of all the institutions and of public education in Ohio as well, would be promoted by such consolidation. An honorable perpetuity might thus be ensured to institutions that have served the State worthily in the past, but which now seem ready to perish. I think that we owe it to ourselves, however, to declare that we have no private schemes for conquest or absorption.

The wants of the University make a chapter by themselves. Every department seeks for assistance and expansion. I will name but few points at this time.

Of large items, I will specify but one. We need a separate building for a chemical laboratory. The part of the main building that we use for this purpose now, is over-crowded, badly ventilated, and in every way ill-adapted to the use. A new building need not be an expensive one, but provision should be made in it for General Chemistry, for Agricultural Chemistry, and for the Mining Department. All the available space for these purposes in the present building has been used, and every foot of it is already occupied, so that there is no proper room for the natural growth and expansion of these departments. Of course, we must look to the State for any such addition to our resources as this, but to the State, in this year of prosperity, all that we ask would be an inappreciable burden.

The buildings are in need of considerable outlay during the coming year. I trust that the Legislature will make provision for these ordinary repairs.

The Mining Laboratory, which is constantly engaged in gratuitous services for the people of the State ought not to look in vain to the Legislature for the means to carry on its work.

I earnestly hope that the Board will be able to grant to the Department of Physics a large enough sum to secure the apparatus which is specified in the accompanying letter of Professor Mendenhall. It is true

that the department was exceptionally well equipped at the opening of the institution, but it has received nothing of account for the last five years, and furthermore, I submit that every dollar spent in this department has been a most profitable investment for the institution. The good name that we enjoy in the State to-day is inseparably connected with the brilliant and effective and practical use of the apparatus of the Physical Laboratory, in the hands of Professor Mendenhall. It is sometimes urged that we are in danger of devoting too much attention to abstract and pure science, and not enough to practical application, but this danger never existed in this laboratory. It always abounded in most interesting and important applications to the interests of everyday life—and we have a right to expect that it will always hold this character while under the same control.

Professor Tuttle's request for physiological apparatus comes again before you with my cordial endorsement. The ground of his application is clearly set forth in his report, and I have a supplementary letter from him stating more fully the urgent need of his department for immediate help.

The requests from the Chemical Department and from the Department of Latin and Greek for books of reference, are moderate and reasonable demands, and I hope that something may be done in this direction at this time.

The additional equipment required for the Department of Drawing is inexpensive, but much needed. I trust that a small appropriation can be made for this purpose.

Very respectfully yours,

EDWARD ORTON.

*Ohio State University, November 18, 1880.*

# DEPARTMENT REPORTS.

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## CHEMISTRY.

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*Edward Orton, Ph.D., President Ohio State University :*

DEAR SIR: I have the honor to present this, my eighth annual report of the Chemical Department.

The class in Inorganic Chemistry, reciting the fall term of last year, numbered sixty-five. The class in Organic Chemistry during the winter term numbered forty-six. The number of students in the laboratory averaged nearly thirty for each term; the total number was thirty-four.

The class in Inorganic Chemistry this present term has an enrollment of fifty-two. There are now in the Laboratory twenty-eight students. The methods used in teaching the Science of Chemistry are the same as those described in my former reports. They seem well adapted to the needs of our students, and I see no reason for making any radical change. Nevertheless, I can not but feel that the slight changes which have been made from time to time, are improvements, and that the work is growing every year into a better defined system. In the Laboratory, especially, the necessary routine has become already a matter of course, and the succeeding generations of students aid one another in the manipulations, and the little contrivances for facilitating work.

Our facilities for instruction in the kind of work that we are undertaking are ample. The class demonstrations are for the most part of the sort that any intelligent student can hope to repeat for himself. I have never thought fit to advise the purchase of expensive and complicated apparatus; but I think that the time has now come when some of additional contrivances would be found useful. The most necessary one, which would come into frequent use, is a large dipping battery, sufficiently strong for the electrolysis of potassium chloride. I had expectations of utilizing the batteries of the Physical Laboratory, but, unfortunately, classes do not recite in the same term, and for this reason the chemical lecture-room should have a battery of its own. Other appliances should be added from time to time, like the now famous Hofmann's lecture-table apparatus; machines for condensing carbonic anhydride &c. I do not desire to buy a large list of these at any one time—but should be glad to add something of the sort every year. If \$50 yearly were devoted to this purpose, we should at no distant day have a suite of apparatus of which we could be proud.

In spite of all attempts to improve it, the ventilation of the Laboratory is very bad. A separate building for the Chemical Department has long been recognized as

a great desideratum. Our present rooms are ill-adapted for a laboratory, and will soon become too small for the needs of the University. I therefore desire earnestly that an effort be made in this direction, and hope, when the building is constructed, that special pains will be taken with the ventilation. No one who has not worked in a room, with a choice only between foul air and unhealthy draughts, can realize how important is this consideration.

If a new laboratory is built, special reference should be had to convenience in analytical work. With very little foresight, the arrangements can be such as to give all necessary facilities at a very moderate cost. If we are to continue in our present rooms, there is need of thorough repair in our poison-hood, and also for additional conveniences in many directions.

I regret always, and at all times, that so few of our students find opportunity to pursue an extended course in chemistry. Two and one-half hours' work, daily, for two years, is not sufficient time for attaining anything like a mastery of analytical chemistry. But so busy are some of our students, that even this is shortened by one cause or another. Some of our last year's graduates accomplished more than should be expected of them, but others did merely the scantiest schedule-work possible. In view of these facts, which apply also to other departments, I would suggest that notice be made, on graduation, of the degree of excellence attained by the student. I am certainly mortified at being compelled to accept the present minimum of attainment for passing in chemistry.

I enclose with this a list of books which ought to be purchased, for the use of our students in chemistry. At present, the chemical library of the University consists of Watts' Dictionary, a valuable work, but not fully supplying our needs. There ought to be in the University Library enough text-books to answer the inquiries of the earnest student in general chemistry. The advanced student should have access to the best journals. We have just begun to take one journal. We need all of the principal and past volumes for thirty years back, besides all of the special monographs relating to analytical chemistry.

Mr. David O'Brine has been a faithful assistant in chemistry during the year. He has had full charge of the laboratory accounts, and of many other details in the laboratory. Other students have helped, as occasion required, gratuitously and zealously.

The past year has been, in many respects, the most successful one in the history of the department. The present year begins with even a better promise, although our numbers are less.

Respectfully submitted.

SIDNEY A. NORTON, *Professor of Chemistry.*

*November 1, 1880.*

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## ENGLISH AND MODERN LANGUAGES.

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OHIO STATE UNIVERSITY, *November, 1880.*

*President Edward Orton, Ph.D.:*

DEAR SIR: I have the honor to submit the following annual report upon the Department of English and Modern Languages and Literature:

The students in the various classes of the Department during the college year 1879-80 were—

	1st term.	2d term.	3d term.
1st year, English.....	16	14	17
2d " " .....	17	16	16
1st " German.....	30	22	21
2d " " .....	10	9	11
1st " French .....	9	8	9
2d " " .....	6	6	6

In the classes of the present term there are—

Junior English.....	13
Senior English.....	17
1st Prepar. German .....	56
2d Prepar. German .....	19
Freshman French .....	42
Sophomore French... ..	7

The classes in the above tables are the same—the names in the second table indicating their place in our newly revised college course. It is not to be understood that the total of the rolls for any given term indicates that just so many different students are in the department. Many pursue two, and quite a number pursue even three, of the studies of the department, thus doing the most or the whole of their college work in the Rhetoric, Logic, Languages or Literature that are committed to me.

In addition to these six daily classes taught by Miss Williams and myself, I have charge of the weekly rhetorical exercises of the College classes. These consist of original speeches and essays. Giving help in their preparation in the way of references, etc., revising them when handed in, and criticism of them when read or delivered, is the full equivalent of a daily recitation. I am glad to believe in a growth of interest in these exercises, and a growing use of good reading as a help thereto. I am grateful to the Board for my share of the appropriation for books, and shall expend it with equal care and pleasure.

The department is in good condition and efficient working, and everything promises well for the college year, so far as I have reason to know.

I am, with great respect, yours,  
JOSEPH MILLIKIN,  
*Professor of English, and Modern Languages and Literature.*

AGRICULTURE, VETERINARY SCIENCE AND BOTANY.

OHIO STATE UNIVERSITY, November 1, 1880.

President Orton:

DEAR SIR: The eighth annual report of the Department of Agriculture, including Veterinary Science and Botany, is respectfully submitted. During that part of the past college year not included in the last report, the classes in Agriculture and Veterinary

Science numbered eleven. The present year shows a gratifying increase, both classes having doubled.

The class in Structural and Systematic Botany, during the third term of last year, and not heretofore reported, numbered fifty. The class in Economic Botany, which for the past year consisted of five students, at present numbers nineteen.

The veterinary models ordered from Paris some months since, have not yet arrived. The stable recently built in the rear of the University has not been occupied, as was intended, for a free veterinary clinic, in consequence of the prevalence of epizootic influenza among the horses of this region.

Various experiments under my direction were conducted during the past year upon the University Farm, by Mr. Thorne, whose report to me in detail is herewith included. A series of experiments under my direction has been conducted during the year with wheat and corn, with potatoes, sugar beets, sorghum, and with grasses, clovers and other forage crops, the design being to determine the relative value of different varieties, and the effect of different methods of culture and the action of various fertilizers, and also the effect of thorough drainage.

At the second course of Lectures to Farmers by the Professors at the University in the month of January last, the attendance was larger than at the lectures of the previous year, and the interest was such as to demand a similar course next January. Portions of the State which heretofore have been represented only at these lectures, have this year sent students to the University.

Yours, truly,

N. S. TOWNSEND.

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## DEPARTMENT OF MATHEMATICS AND CIVIL ENGINEERING.

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OHIO STATE UNIVERSITY, COLUMBUS, OHIO, *November 1, 1880.*

*Edward Orton, President :*

DEAR SIR: I have the honor to make the following report touching the work done in this department, for the year closing October 31, 1880. The number of students in the several subjects taught is given in detail, by sessions:

Fall term, 1879—1st year, Engineering, 19; 2d year, 12; Algebra, 50.

Winter term, 1880—Algebra, 45; Geometry, 39; Descriptive Geometry, 15; 2d year, Engineering, 10.

Spring term, 1880—Geometry, 25; Trigonometry, 36; 2d year, Engineering, 10; Geodesy, 1; Astronomy, 21.

Fall term, 1880—2d year, Engineering, 6; Surveying, 19; Geometry, 24; Algebra, 84.

The work, in all the studies, has been, in general, satisfactory.

Field-work, for the classes in engineering, is carried on in the fall and spring terms, every day when the weather permits. It consists in the usual work of leveling, measuring heights and distances, surveying various tracts of land in various ways,

setting out curves, and executing all the preliminary work in railroad surveys, as commonly done in actual practice.

In the winter session, when field-work is ordinarily impracticable, these classes are instructed in all the parts of drawing pertaining to engineers' work, viz.: platting, isometric, axonometric, and topographic work, shades and shadows, and the general principles of perspective.

I am glad to say that the generous action of the Board of Trustees makes it possible for me to announce that before the close of the current year, the College will be furnished with a telescope from the house of Alvan Clark & Sons.

Very respectfully,

R. W. McFarland.

ZOOLOGY AND COMPARATIVE ANATOMY.

OHIO STATE UNIVERSITY, COLUMBUS, OHIO, *November 1, 1880.*

*Edward Orton, Ph.D., President:*

DEAR SIR: I have the honor to submit the following report:

During the collegiate year, which terminated on the 23d of June last, the number of students in the various classes under my charge was as follows:

Elementary-Physiology .....	52
Elementary Zoology .....	41
Vertebrate Anatomy .....	9
Advanced Zoology.....	3
Advanced Physiology.....	8
<hr/>	
Total class-enumeration.....	113

Deducting 32 who were enrolled in more than one class, the number of students who have entered classes in this department during the year recently closed, is 81.

The enrollment for the current term is as follows: Elementary-Physiology, 24; Comparative Anatomy, 1; Advanced Physiology, 5.

The changes in the courses of study recently adopted by the faculty, will, necessarily, operate to make the classes in my department much smaller during the current year, and the year following, than during the last and those immediately preceding it. In view of this fact, I have consented to take temporary charge of the weekly exercise in English of the First Preparatory class, the enrollment of which is 55.

No changes in the text-books used, or the methods of instruction employed, have been made during the collegiate year. No additions of importance have been made to the equipment of the department since my last report.

In view of its direct practical value, I would again respectfully urge the importance of due provision for the efficient teaching of Physiology to advanced students. Physiology alone, of all the branches of Natural Science now taught in the University, is at present studied almost entirely from books, whereas, suitable apparatus is



as much of a necessity for its proper study as for that of physics in chemistry. Advanced students of this important science, looking forward to the practice of medicine, either human or veterinary, ought to derive as large a share as possible of their knowledge directly from nature, instead of receiving it at second-hand, as at present. The value of such direct practical knowledge, not only to those who expect to have the lives of their fellow-men entrusted to their keeping, but also to those who have to do with the breeding and care of our domestic animals, would far more than repay the necessary outlay.

I must also urge the immediate need of new skeletons of the domestic animal and of man. Those now in our possession have yielded so much to the effects of years of constant use that they are no longer a credit to the University.

An appropriation of one thousand dollars for the first of these wants, and of three hundred for the second, would be more than repaid in the efficiency of the department.

I would also respectfully suggest to the Trustees of the University the desirability of securing legislation, looking to the performance of the duty enjoined by the organic law of the University of making a complete collection of the noxious and beneficial animals of the State. I need hardly refer to the value of such a collection.

All of which is respectfully submitted.

ALBERT H. TUTTLE,  
*Professor of Zoölogy and Comparative Anatomy.*

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## MILITARY SCIENCE AND TACTICS.

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OHIO STATE UNIVERSITY, *November 1, 1880.*

*Edward Orton, Ph.D., President Ohio State University :*

SIR: I have the honor to make my fifth annual report to you of the departments under my charge.

### I. MILITARY SCIENCE AND TACTICS.

With the restoration of the compulsory feature to the drill, things, I am happy to say, fare much better in the military department.

I have in my charge one hundred and forty-four (144) young men undergoing military instruction. This number includes the cadet band, and also two members of the Senior class, who, though excused by the action of the Board of Trustees, yet prefer to drill. Seniors and Juniors being exempt by trustee action, all other male students are now regularly in drill, except those who have been excused by you—thirty in number—up to date.

For administrative purposes the cadet battalion is divided up into two permanent companies, but for battalion manœuvres it will be formed into four or more smaller companies. It would be gratifying to me if a place could be found in the annual report, in which to publish the names of the commissioned and non-



commissioned staff, as also of the company, officers and sergeants. These young men earn their distinction through much labor and commendable zeal, and should therefore be entitled to this notice.

The officers in charge of the military department at colleges are now ordered by the President of the United States—through the Secretary of War—to make quarterly reports to the Adjutant-General of the Army, concerning the number and discipline of their respective cadet organizations; and also in each case, as regards the progress made in the department, and the interest manifested by the Faculty in military drill. This seems to me a very good thing; it brings these military organizations in closer relation with the General Government, and I have no doubt may result beneficially in this, that, through recommendations made to the Adjutant-General, worthy cadets aspiring to positions in the regular army may obtain the same. But as colleges now applying for the detail of army officers greatly exceed in number the details allowed by law, the United States Government—it has been plainly hinted—may at any time withdraw the services of an officer from a college, where there may be a lack of co-operation with the military department on the part of the college authorities.

In our University the military discipline is thorough and exacting, though never unreasonable. Reports are given for breaches of discipline, which, if not removed, count as *one* or *two* demerits, according to the nature of the offense. Ample opportunity, however, is given to every cadet to explain any reports he may receive; and in this respect the department is, perhaps, more lenient than it should be, as the student is but too often given the benefit of a doubt. Unexplained reports, or for which unsatisfactory explanations have been offered, are reported in writing to you without delay. As a guard against errors, full lists of reports, for which *one* or *two* demerits are given, have been made out by me, and are kept in the Adjutant's office for reference. Exact copies of these lists have been duly handed to you. Should a report be worded in such a way as not to be found in those lists, then such, I have ordered, shall count as one demerit only, thus giving the benefit, if any, to the student.

In the theoretical course I have this year twenty-four (24) pupils, twenty (20) of these taking up the study of Tactics and Regulations, while four (4) are in the advance Military Science class. Practical and theoretical instruction is being given as in previous years, and in accordance with methods stated in former reports.

As there is found to be no site on the University grounds on which a target might be placed with safety, I hope that a target-screen may yet be erected, so that we may reap the benefit of what is now considered an essential part of a soldier's training. From the liberal supply of ball cartridges furnished us by the War Department every year, it might be inferred that we are expected to use them.

The Cadet Band is doing finely under the competent leadership of Sergeant Makepeace. I hope that the Board will furnish its members with white belts and pouches for music, of which they stand very much in need. The Cadets, tired of the red stripe, and of the red about their uniforms generally, have secured a change. The new uniform is neat and tasteful, but hardly sufficiently *pronounced* for a military uniform; yet, as it meets with their general approval, I heartily congratulate them on having obtained what they wanted.

A drill-hall is of the utmost importance to the success of the drill, and should be provided, with as little delay as possible, as much valuable time is lost in unfavorable weather. Neither the college-halls nor the basement meeting this pressing want, I urgently recommend this matter to the Board of Trustees.

I transmit herewith a list of the Cadet Officers and Sergeants:

1. *Staff*—

Edward Hyatt, Adjutant.  
E. O. Ackerman, Acting Q. M.  
George D. Makepeace, Band Leader.  
Horace Allen, Sergeant Major.  
F. M. Allen, Quartermaster Sergeant.

2. *A Company*—

H. R. Pool, Captain.  
Paul Cooke, Lieutenant.  
J. T. Anderson, 1st Sergeant.  
W. A. Ely, 2d Sergeant.  
P. C. Robinson, 3d Sergeant.  
J. H. Galbraith, 4th Sergeant.

3. *B Company*--

Edward Hyatt, Captain.  
M. N. Mix,                 }  
E. O. Ackerman,         } Lieutenants.  
Chas. J. Howard, 1st Sergeant.  
D. A. Fisher, 2d Sergeant.  
F. Shedd, 3d Sergeant.  
J. R. Lovejoy, 4th Sergeant.

## II. MATHEMATICS.

In this department I have Analytical Geometry and the Calculus (Differential and Integral). This year's class numbers thirteen (13) members. They will go through these studies by the end of the present academic year. Loomis' revised editions are used as text-books, but full recourse is had, when necessary, to such mathematical authorities as Hadden, Haven, Woolhouse, De Morgan, Gregory and Church. The frequent examinations that I have had so far during the term attest that the class, generally, is doing well.

## III. ELOCUTION.

In this I have eight (8) students at present, mostly of the higher classes. They receive individual instruction in declamation, and, when they desire it, also in reading. As I have already stated in former reports, I will again respectfully suggest that, were the Trustees to offer a prize or two to the best declaimers, such an impetus would be given to this branch of instruction as to cause, without any doubt, most excellent results.

I am, sir, very respectfully,

Your obedient servant,

LUIGI LOMIA.

*1st Lieut. U. S. 5th Art'y, Prof. Military Science and Tactics, and Adjunct Prof. Mathematics.*

PHYSICS AND MECHANICS.

OHIO STATE UNIVERSITY, *November 16, 1880.*

*Edward Orton, Ph.D., President :*

DEAR SIR: I submit the following report upon the Departments of Physics and of Mechanical Engineering.

PHYSICS.

*Winter Term, 1880.*

Elementary Physics—students.....	40
Advanced, or Laboratory Physics—students.....	10

*Spring Term.*

Advanced, or Laboratory Physics—students.....	10
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*Fall Term.*

Advanced, or Laboratory Physics—students.....	5
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MECHANICS.

*Winter Term, 1880.*

Machinery and mill-work—students.....	3
Machine, designing and drawing.....	3
Mechanical Laboratory.....	9

*Spring Term.*

Prime movers .....	3
Advanced, or machine designing, drawing.....	3
Mechanism.....	2
Mechanical Laboratory.....	6

*Fall Term, 1880.*

Analytical mechanics .....	6
Mechanism.....	1
Thermodynamics .....	1
Mechanical Laboratory.....	18

*Aggregate for 1880.*

Class attendance in Physics .....	65
Class attendance in Mechanical Engineering .....	50

The occupation of the new Mechanical Building, by classes, began last January. Most of the machines and appliances were on hand at that time, with the exception of the steam engine, the latter being delayed nearly two months at the factory. The

machines, though among the best made, were not available for class work till after the adaptation of accessories, such as tools, drills, cutters, centers, chucks, etc. A considerable portion of the time of the students in practice was put upon this during the winter and spring terms. It was not, therefore, till this fall that we commenced Mechanical Laboratory practice on the plan contemplated, and as detailed in previous reports.

Though the machines have all been used and found efficient, they have only been so employed in a limited way. That is, the quantity of accessories is yet very limited, so that some of the machines have not been used in all the arrangements possible, or to the full capacity of illustration. It is intended to complete this during the present year, as the classes advance to require it.

The cases and desks, for which appropriations were made last June, have been completed, and are in use. Specimens which have been promised, will make a good beginning of a collection, for the room provided for them.

Very respectfully yours,

S. W. ROBINSON.

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## LATIN AND GREEK.

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OHIO STATE UNIVERSITY, COLUMBUS, OHIO, *November 1, 1880.*

*Edward Orton, Ph.D., President:*

DEAR SIR: My fifth annual report for the department of Latin and Greek is herewith respectfully submitted:

I have, as heretofore, four daily recitations--two in Latin, and two in Greek. At the beginning of the present term over a hundred students were enrolled in this department, showing a handsome increase over last year, and furnishing ample evidence that the ancient languages are holding their own so far as the popular demand is concerned. The largest percentage of increase is naturally in the preparatory classes, and this leads me to call attention again to the urgent necessity of making permanent provision for the accommodation and instruction of these classes. They are at present in charge of a student assistant, Mr. Lewis, who is doing as good work with them, hampered as he is by his own studies, as could reasonably be expected. There are about fifty members in the present first preparatory class in Latin, against thirty last year, and it is only fair to expect a like increase next autumn; which will necessitate a division of the class, and render additional teaching-force indispensable. This important question is pressed upon the consideration of the Trustees. The preparatory department has abundantly proved its own usefulness, and ought to be vigorously sustained.

With the other needs of the department, set forth in previous reports, yourself and the Trustees are familiar. A small sum, to be placed at my disposal for the purchase of books and charts from time to time, would best meet my desires in this re-

gard. The general progress of the students in my classes has been, on the whole, very satisfactory.

The following figures show, 1st, the number of students in the department during the last college year (1879-80); and, 2d, the number enrolled during the present year:

	Last year.	This term.
Sophomore Latin.. .. .	8	7
Freshman Latin .. . . .	13	12
2d preparatory Latin.....	17	16
1st       "       " .. . . .	36	54
	<hr/>	<hr/>
Total.....	74	89
Junior Greek.....	...	5
Sophomore Greek .. . . .	5	4
Freshman Greek ..... . .	8	7
	<hr/>	<hr/>
Total.....	13	16
	<hr/>	<hr/>
Grand total.....	87	105

Deducting 14 from the first of these totals, and 13 from the second, for students taking both studies, the number of *different* students in this department will be respectively 73 and 92.

Yours, respectfully,

J. R. SMITH,  
*Assistant Professor.*

DEPARTMENT OF MINING AND METALLURGY.

OHIO STATE UNIVERSITY, November 1, 1880.

*President Edward Orton, Ph.D.:*

DEAR SIR: I have the honor to present the following report on the work of the Mining Department for the past year. During the winter and spring terms there were nine students in the classes of Mining, Metallurgy, and Assaying, and a special student taking a short course preparatory to entering a mining business.

The class in Mineralogy numbered twenty-one; this is the only class in this department which forms part of the regular college course for all the scientific degrees, and hence is necessarily larger than the purely technical classes.

The present fall term opens with five students in Metallurgy and Assaying, owing to the change adopted in the courses last year. There would have been no regular class in Metallurgy this fall. This study having been thrown forward a term, so that for this fall there is a break of one term; taking advantage of this, I was able to give the hour to a special class and thus enable some students to finish their work, who would have otherwise been, by the same change, compelled to leave it incomplete. In future, however, the classes will come on regularly.

The State Laboratory has been crowded with work, which has received as much time and attention as could be given it without neglecting the class instruction. There have been one hundred and fourteen analyses and assays finished and reported during the year, mostly of iron ores, limestones, coals, and fertilizers.

This work would be of more value, if the manner in which the samples were taken could be more definitely controlled by the department, so as to secure for analysis a specimen representing an average.

A step is being taken in this direction now by requiring from all parties sending ores, a full statement of the character and location of the deposit whence the sample is taken, so that it is hoped that this analysis made during the coming year may give more information of permanent value. The value of the analyses made in this Laboratory is certainly one thousand or twelve hundred dollars a year, and this should give valuable public information, instead of going, as is too often now the case, merely to benefit some individual's private business.

The Laboratory needs, most imperatively, about two hundred dollars for additional equipment in acid chambers for carrying off corrosive vapors, and a special appropriation for this purpose is earnestly asked, as the health of those employed in it is concerned in its more perfect protection from such poisons.

Very respectfully,

NAT. W. LORD,

*Assistant Professor of Mining.*

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## HISTORY AND PHILOSOPHY.

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OHIO STATE UNIVERSITY, COLUMBUS, *November 15, 1880.*

*President Edward Orton, Ph.D. :*

DEAR SIR: This, my second annual report, is a brief exhibit of the workings of the department committed to me, during the first year of its existence, as well as being a statement of its present status. That it has met a want and been appreciated is manifest by reference to my class-rolls for the year, where it appears that a large number of our students have availed themselves of its advantages.

The following is a tabulated statement of the numbers in the several classes in the department for the college year of 1879-1880 :

*First Term.*

Advanced History ( Middle Ages ).....	10
Philosophy.....	5
Elementary English .....	36

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Total..... 51

*Second Term.*

Advanced History (Modern Europe).....	10
Philosophy.....	5
Elementary U. S. History .....	47
<hr/>	
Total.....	62

*Third Term.*

Advanced History (U. S. Constitution) .....	10
Philosophy.....	3
Elementary U. S. History, second class.....	22
<hr/>	
Total.....	35
<hr/>	
Total for year.....	148
Twice counted .....	44
<hr/>	
Net total for year.....	104

If to this be added the class of forty-five in General History, taught by yourself, we shall have a total of one hundred and forty-nine—the number of students availing themselves of the advantages of the department in one year.

The present term marks an increase in the number of advanced students in History and Philosophy; the classes in these subjects now being 14 and 6 respectively. I have in addition, a class of eighty in Abbott's "How to Write Clearly"—a weekly recitation—to continue throughout the year. Two classes in Elementary United States History were taught last year. The second of these was extra to the prescribed work, and was designed to afford facilities to students who felt themselves discommoded by the transition from the old to the new curriculum. The total number in these two classes was sixty-nine.

In the advanced History, particular attention is given to the growth of constitutions and the rise of representative government. The condition of the people, of the mechanic arts, of agriculture, of commerce, and the tendency of the historic forces which give character to civilization, receive special consideration.

In the first term, Hallam's "Middle Ages" is supplemented by a course of lectures on the English Constitution. On the completion of the text-book work in the second term, a course of lectures on the Present Condition of the Great Powers follows. In the third term, no text-book is used. The Constitutional History and Civil Polity of the United States, is taught exclusively by lectures and by reference, (1) to the original sources, such as Elliott's "Debates," the "Annals" and "Debates of Congress," etc., and (2) to such respectable constitutional Histories as those of Curtis, Benton and Von Holst. One recitation hour per week throughout the year, is devoted to the reading and criticism of Theses on historical questions—an exercise similar to that afforded in the *seminar* of German Universities.

The first term's work in Philosophy is devoted chiefly to the principles of "presentative" and "representative knowledge." Special attention is given to the problem of the relation of Mind and Brain, the subject being studied both historically

and with reference to the latest physiological investigation. The philosophy of reasoning and the study of the Emotions and Will are embraced in the second term's work; the latter subjects being taught in a six weeks' course of lectures. A lecture on the History of Philosophy is given each week. The third term is devoted to Ethics, both in the philosophical and practical aspects of the science.

The spirit of earnestness and fidelity displayed by my students, in the work of personal investigation and research, has proven a constant source of satisfaction to me, since I believe it witnesses to the value of that special training, which it is our aim to give in the advanced classes.

The grant of \$125.00 (a part of the library fund) for the purchase of books relating to the work of the department, is gratefully acknowledged.

Respectfully submitted,

JOHN T. SHORT,

*Assistant Professor of History and Philosophy.*

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## MECHANICAL AND FREE-HAND DRAWING.

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OHIO STATE UNIVERSITY, COLUMBUS, OHIO, *November 1, 1880.*

*Edward Orton, Ph.D., President:*

DEAR SIR: I have the honor to present my first report for the Department of Mechanical and Free-hand Drawing.

Having been connected with the University for so short a time, I cannot report so intelligently as I should desire concerning the state of my department. The term opened with about 40 students in my department, but the number has now increased to 55. My students are divided into two classes, one group constituting the Free-hand Drawing class, and the other, the class in Mechanical or Projection Drawing.

In the former class there are now 42 young men and ladies pursuing courses in Industrial and Artistic Drawing—drawing from the flat, in outline, or shaded; drawing from the round in various mediums, with the intention of extending the study to working in color. In the Projection Drawing class there are now 13 young men studying and practicing the elements of mechanical drawing as a preparation for the special drawing in their respective technical courses.

This latter study is completed in one term, whereas the Free-hand Drawing class holds for the whole year.

Having stated the nature of my classes, and the work which is being done, I shall be pleased to forecast what I hope will be the course to be pursued in the future in my department.

Drawing is rather an exceptional study, but although its principles are as exact and demonstrable as those of any other study, the practice of the act is limitless. With many of the sciences, arithmetic or geometry, the study is soon carried to an



end, but with drawing, the earlier it is begun and the oftener it is practiced, the greater the mastery of the hand and the discernment of the eye. Therefore, I should hope to see drawing introduced into either the first and second, or the second year of the Preparatory Course.

The amount of time being two hours per week ; and the subject taught by class-lectures of one hour each. Great advantages are obtained by class-lectures in drawing, as in any other study ; an amount of enthusiasm is kept up, the attention of all members of the class is better secured, and principles of form, perspective and color are much better and vastly more easily explained once before a class, than many times individually in the studies.

This earlier commencement of the study will undoubtedly develop latent talent, leading many perhaps to continue the study, who would not otherwise have taken it later in their college courses, owing to the press of other studies.

In the Freshman year the study should be taught as it is now—two hours per week, and in the same manner—by studio practice. The principles having been learned in the previous year by the class-lectures, and the elementary part of the practice acquired, the students will now be prepared to take up the studio work proper.

The studio has been stocked with a number of excellent plaster casts for drawing from, and a hundred or more drawing-copies in outline and shaded ; and I feel certain, that were the studio better filled up—with screens for the casts to hang on, good facilities for work, and proper light, it would attract many more than at present pursue the study. The screens needed are four or five in number, with shelves for groups of models, and hooks for the casts to hang on. The department also requires a cabinet or case for the reception of copies, and separate spaces or lockers for each student's drawings and materials.

As regards Projection Drawing, it would seem wise to introduce it into the first term of the Sophomore year of the Civil Engineering Course. It will give these students the elementary training for the special engineering draughting, and will synchronize the study in all the technical courses.

One other suggestion I would like to make, and that is, that a good opportunity may now be offered to persons desirous of becoming teachers of drawing, or to those who desire to pursue special courses in Art. A great amount of time can be utilized that is not now used in its fullness, due to the irregularity of the students' hours. If the students, who now come in at various hours through the day, could by any harmonious means be brought together, a great deal of time could thus be saved, and may be devoted to the special students in Art. This would be fulfilling the demand of the times for designers, and for teachers of drawing in the public schools ; in other words, an Art Training Department might be established. This is a suggestion to be considered with no little attention.

Very respectfully,

W. A. MASON, JR.

CIRCULAR AND CATALOGUE.

# FACULTY.

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**EDWARD ORTON, PH.D.,**  
President, and Professor of Geology.

**SIDNEY A. NORTON, PH.D., M.D.,**  
• Professor of General and Applied Chemistry.

**JOSEPH MILLIKIN, A.M.,**  
Professor of English Language and Literature, and of the French and German Languages.

**NORTON S. TOWNSHEND, M.D.,**  
Professor of Agriculture.

**R. W. McFARLAND, A.M.,**  
Professor of Mathematics and Civil Engineering.

**ALBERT H. TUTTLE, M.Sc.,**  
Professor of Zoology and Comparative Anatomy.

**LUIGI LOMIA, M.Sc.,**  
First Lieut. Fifth Artillery, U. S. A.: Professor of Military Science and Tactics, and Adjunct Professor of Mathematics.

**S. W. ROBINSON, C.E.,**  
Professor of Physics and Mechanics.

**JOSIAH R. SMITH, A.M.,**  
Assistant Professor of the Latin and Greek Languages.

**NAT. W. LORD, M.E.,**  
Assistant Professor of Mining and Metallurgy.

**JOHN T. SHORT, PH.D.,**  
Assistant Professor of History and Philosophy.

**WILLIAM A. MASON, JR.,**  
Assistant Professor of Drawing, Painting and Design.

**ALICE WILLIAMS,**  
Assistant in Department of Modern Languages.

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**JOSIAH R. SMITH, A.M.,**  
Librarian.

**MISS S. GLOVER,**  
Assistant Librarian.

## STUDENT ASSISTANTS.

— — —  
CHARLES M. LEWIS,  
Assistant in Latin and Greek.

DAVID O'BRINE,  
Assistant in Chemistry.

HORACE L. WILGUS,  
Assistant in Mathematics.

CHAUNCEY B. BAKER,  
Assistant in Zoology.

SIDNEY H. SHORT, B.S.,  
FREDERICK KEFFER,  
Assistants in Physics.

FREDERICK MARVIN,  
Assistant in Mechanics.

## ORGANIZATION AND EQUIPMENT.

The Ohio State University is founded on the Congressional land grant of July, 1862. By that act a large amount of the public land was turned over to the several States, the proceeds of the sales to be devoted to the better education of the industrial classes. The share of each State was proportioned to its representation in the National Legislature, and thus six hundred and thirty thousand acres came into the possession of Ohio. This munificent gift was unfortunately pressed for sale upon a temporarily overstocked market, and the State realized only fifty-four cents to the acre. The total amount of the sales (\$342,450) was, however, put at interest, and when the institution was opened, in September, 1873, the principal and interest together constituted a productive fund of something over \$500,000, which has since been increased to a small extent, until an annual income of \$34,000.00 has been reached.

The Legislature having passed an act to authorize the several counties of the State to raise money to secure the location of the University, an offer of \$300,000 from Franklin county was accepted by the Board of Trustees, and the University was permanently located at Columbus. The money furnished by Franklin county has been mainly expended in the three following items: 1. The purchase of a valuable farm of three hundred and thirty acres within the corporate limits of the city of Columbus. 2. The erection of a spacious and elegant college building and two dormitories for students. 3. The equipment of the various departments of instruction in the University.

The total value of endowment and property at the present time exceeds \$1,000,000.

The departments already established, and the provisions made for giving instruction in them, are as follows:

### I. PHYSICS.

For this subject ample provision has been made in the equipment of the institution. It is safe to say that, in the opportunities afforded for thorough study in it, the University already surpasses most of the institutions of the country. Its laboratory is supplied with expensive and well-selected apparatus, designed not only for illustration, but also for original research in all the leading divisions of the science. Students are directed to its use in the way of original investigation as soon as they are properly prepared to undertake such work.

### II. CHEMISTRY.

The course in General Chemistry provides instruction in pure science, developing the theories and laws in order, and illustrating them by an extended suite of experiments. This course is supplemented by an important series of lectures on the applications of Chemistry to the Arts.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy.

The course in Quantitative Chemistry includes both the volumetric and the gravimetric methods. The student will also be assisted in any special branch of the science that he may desire, and take up in detail topics which relate to pharmacy, medicine, agriculture, and other sciences in which the principles of Chemistry are applied.

### III. ZOÖLOGY AND COMPARATIVE ANATOMY.

The subjects of Zoölogy and Comparative Anatomy constitute a distinct professorship, and means have been provided for making the instruction in this subject thorough, practical and extensive. A large amount of material, selected with special reference to its availability in teaching, has already been accumulated.

A dissecting-room, with good facilities for the study of veterinary anatomy, is also furnished, while for practical training in microscopy there have been supplied eight microscope stands, representing all the principal modes of construction, and nineteen objectives, giving powers up to 2,500 diameters.

A Physiological Laboratory has been established during the present college year, which is supplied with apparatus for the quantitative determination of several of the more important animal functions. It constitutes an important and timely addition to the means of instruction furnished by this department.

### IV. BOTANY AND HORTICULTURE.

These subjects, comprising the scientific and practical sides of the study of the vegetable kingdom, have recently been combined in a separate department, and, at the opening of the Spring term, extended and thorough instruction in them will be begun.

### V. GEOLOGY.

The University is able to present unusual advantages for the study of Geology. By act of the Legislature it has been put in possession of all the collections made by the late State Geological Survey, and these collections have been supplemented by valuable additions of fossils and minerals from various sources. The State collection embraces a very complete representation of every geological formation shown in Ohio.

### VI. AGRICULTURE.

The department of Agriculture, which also includes the *diseases of animals* and their *medical and surgical treatment*, is provided for in a distinct professorship, the aim of which is to acquaint the student with the theory and practice of a truly rational system in this most important field. The course extends through two years, and is rendered practical by being constantly connected with the work that is carried on upon the farm. Numerous opportunities are afforded to the students in veterinary medicine of observing the treatment of diseased animals.

## VII. MATHEMATICS.

Under the two professorships that divide the work of Mathematics between them a full course of instruction is provided for, including also the subject of Astronomy. A term is given to Trigonometry, and one and a half terms are given to each of the two subjects, Analytical Geometry and Calculus. The work of several other departments, especially Civil Engineering, Physics and Mechanics, and Chemistry require the constant and practical application of the knowledge acquired in mathematical study.

## VIII. DRAWING AND DESIGN.

Instruction in these subjects is provided in the University, and all needful facilities are furnished by which those who wish may acquire skill in these several departments of art. Drawing is made a prominent element in the education of all students in engineering.

## IX. CIVIL ENGINEERING.

This course, which extends through two years, includes surveying, location, and construction of roads and railroads, construction of bridges, strength of materials, geodesy, etc. The time of one professor is chiefly devoted to this department. Field-work is extensive and varied, for the execution of which a full set of engineering instruments of the finest construction is provided.

## X. MINING ENGINEERING.

This department is now in successful operation, and classes are established in the several branches belonging to it. The mining of coal and the manufacture and working of iron are recognized as leading subjects in it, but full courses of instruction are offered in general metallurgy. The department is well equipped, both for instruction and practical work.

## XI. MECHANICAL ENGINEERING.

The University is able to offer excellent advantages in this important subject. A mechanical laboratory has been established, and is in successful operation. The Russian system of hand-training has been introduced, which insures the imparting of a measure of practical skill, together with theoretical instruction.

## XII. MILITARY SCIENCE AND TACTICS.

In accordance with an act of Congress, an officer of the United States army has been detailed by the War Department to give instruction in the subjects named above. An extended course of lectures and recitations in Military Science is offered to such students as desire it, while thorough training in military drill is made obligatory upon all male students, except such as are excused on reasonable grounds.

## XIII. ENGLISH, FRENCH AND GERMAN LANGUAGES.

In the organization of the University, special prominence is given to the modern languages. Some of the students who resort here will study no language but their own, and it is, therefore, imperative that the opportunities for training in English

should be made ample, while all who expect to attain any good degree of proficiency in the natural sciences must certainly acquaint themselves with French and German.

The course of study in the English language and literature has been made especially complete—as full and thorough as any offered in the colleges of the country. Rhetorical training of all students in the regular courses is also included here.

French and German can be pursued in courses as extensive as the needs of the student may require.

#### XIV. LATIN AND GREEK LANGUAGES.

Ample provision is also made for the study of the Latin and Greek languages, not only in compliance with those terms of the organic law of the University which forbid the exclusion of classical studies, and which declare one of the aims of the institution thus endowed to be “the liberal education of the industrial classes,” but also because of the great advantage which such study gives in acquiring a thorough knowledge of our own and other modern languages; and, in the last place, but not the least important, because of the relations which they bear to literary, historical, and scientific studies.

#### XV. PHILOSOPHY AND HISTORY.

Courses of study in these important subjects are now organized. To the study of Psychology and Ethics a year is given, and the same amount of time to European and American History. Under the latter head, the constitutional history and civil polity of the United States is included. The subjects are taught both by text-books and lectures, and the student is trained, as far as possible, to habits of independent research.



## DEGREES AND COURSES OF STUDY.

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The University offers three general degrees, viz.: Bachelor of Arts (A.B.), Bachelor of Philosophy (Ph.B.), and Bachelor of Science (B.Sc.) It also offers four special degrees, viz.: Civil Engineer, (C.E.), Mining Engineer (M.E.), Mechanical Engineer (Mech.Eng.), and Bachelor of Agriculture (B.Ag.)

In addition to these degrees, certificates of work done in the several departments will be granted, as hereafter stated.

The courses of study which lead to the above-named degrees can be learned from the following statements and schedules.

A Preparatory Course of two years' duration is provided for those students who enter the University directly from the common or district schools. This course includes the ordinary studies of the better grade of the high schools of the State. It is expected that the graduates of these schools can sustain examination in the entire Preparatory Course, and enter directly upon proper college work.

The Preparatory Course is shown in the following schedule:

### PREPARATORY COURSE.

#### FIRST YEAR.

First Term—Algebra, from Quadratics; Physical Geography; Latin or German.

Second Term—Algebra, completed; United States History; Latin or German.

Third Term—Botany; General History; Latin or German.

Exercises in English Grammar and Composition one hour each week throughout the year.

#### SECOND YEAR.

First Term—Geometry; Human Physiology; Latin or German.

Second Term—Geometry, completed; Physics; Latin or German.

Third Term—Trigonometry; Physics; Latin or German.

Exercises in Rhetoric and English Composition one hour each week throughout the year.

Either Latin or German, as named above, is to be chosen for a two years' course. Students looking forward to the degree of Bachelor of Arts, or to the degree of Bachelor of Philosophy, will take Latin; candidates for other degrees will take German.

*Text-Books*—Algebra, *Loomis*; Geometry, *Loomis*; Trigonometry, *Loomis*; Physical Geography, *Guyot*; Human Physiology, *Huxley*; United States History, *Eliot*; General History, *Freeman*; Botany, *Wood*; Physics, *Norton*.

The text-books in Latin and German will be found under the heads of these departments on a subsequent page.

### GENERAL AND TECHNICAL COURSES.

In the following schedules the studies required for the several degrees of the University are named. The character and amount of the work done in each can be further learned from the detailed statements in regard to the departments that follow the schedules. It will be observed that a considerable amount of the work is common to the several courses, and, further, that this common work is made, for the most part, synchronistic in the courses.

(A.) GENERAL COURSES.

FOR THE DEGREE OF BACHELOR OF ARTS.

*Freshman Year.*

First Term.	Latin, <i>Livy, Books I and XXI.</i>	Greek, <i>Leighton's Lessons.</i>	Chemistry, Norton.
Second Term.	Latin, <i>Cicero De Senectute.</i>	Greek, <i>Lessons and Anabasis, Book I.</i>	Chemistry, Norton.
Third Term.	Latin, <i>Horace, Odes.</i>	Greek, <i>Anabasis, Books II and III.</i>	{ Chemistry, 2-5, Lectures. Mineralogy, 3-5, Dana.

Free-hand Drawing two hours each week throughout the year.

*Sophomore Year.*

First Term.	Latin, <i>Horace, Satires.</i>	Greek, <i>Memorabilia and Phaedon.</i>	Botany.
Second Term.	Latin, <i>Tacitus, Germania, and Agricola.</i>	Greek, <i>Herodotus' Selections.</i>	Zoology, Packard.
Third Term.	Latin, <i>Plautus, Terence, Quintilian.</i>	Greek, <i>Euripides, Alcestis.</i>	Zoology, Packard.

*Junior Year.*

First Term.	English Literature, <i>Anglo-Saxon.</i>	Greek, <i>Homer, Odyssey.</i>	Geology, Le Conte.
Second Term.	English Literature, <i>Middle English.</i>	Greek, <i>Sophocles, Oedipus.</i>	Geology, Le Conte.
Third Term.	English Literature, <i>Modern English.</i>	Greek, <i>Demosthenes.</i>	Astronomy, Loomis.

*Senior Year.*

First Term.	Psychology, Porter.	Rhetoric, De Mille.	Elective course in Science or History for the year.
Second Term.	Psychology, Porter.	Rhetoric and Logic.	
Third Term.	Ethics, Bascom.	Logic, Jevons.	

FOR THE DEGREE OF BACHELOR OF PHILOSOPHY.

Freshman Year.

First Term.	Latin, <i>Livy</i> .	French, <i>Grammar, Duf-fet</i> .	Chemistry, <i>Norton</i> .
Second Term.	Latin, <i>Cicero</i> .	French, <i>Masson's Classics</i>	Chemistry, <i>Norton</i> .
Third Term.	Latin, <i>Horace</i> .	French, <i>Masson's Classics</i>	{ Chemistry, 2-5, Lectures. Mineralogy, 3-5, Dana.

Free-hand Drawing two hours each week throughout the year.

Sophomore Year.

First Term.	Latin, <i>Horace</i> .	French, <i>Moliere</i> .	Botany.
Second Term.	Latin, <i>Tacitus</i> .	French, <i>Corneille</i> .	Zoology.
Third Term.	Latin, <i>Plautus, etc.</i>	French, <i>Feuillet</i> .	Zoology.

Junior Year.

First Term.	History, <i>Hallam</i> .	English Literature, <i>Early</i> .	Geology.
Second Term.	History, <i>Yonge</i> .	English Literature, <i>Middle</i> .	Geology.
Third Term.	History, <i>Lectures</i> .	English Literature, <i>Modern</i> .	Astronomy.

Senior Year.

First Term.	Psychology, <i>Porter</i> .	Rhetoric, <i>De Mille</i> .	Elective course in Science for the year.
Second Term.	Psychology, <i>Porter</i> .	Rhetoric and Logic.	
Third Term.	Ethics, <i>Bascom</i> .	Logic, <i>Jerome</i> .	

FOR THE DEGREE OF BACHELOR OF SCIENCE.

*Freshman Year.*

First Term.	Analytical Geometry.	French, <i>Duffet</i> .	Chemistry, <i>Norton</i> .
Second Term.	Differential Calculus.	French, <i>Masson's Classics</i> .	Chemistry, <i>Norton</i> .
Third Term.	Integral Calculus.	French, <i>Masson's Classics</i> .	{ Chemistry, 2-5, Lectures. Mineralogy, 3-5, Dana.

Free-hand Drawing two hours each week throughout the year.

*Sophomore Year.*

First Term.	{ Elective course in Botany, Chemis- try, or Physics for the year.	French, <i>Moliere</i> .	{ Botany, 3-5. Zoology, 2-5.
Second Term.		French, <i>Corneille</i> .	Zoology.
Third Term.		French, <i>Feuillet</i> .	Zoology.

*Junior Year.*

First Term.	{ Elective course in Botany, Chemis- try, or Physics for the year.	{ Elective course from list of sciences al- ready given, with addition of verte- brate Anatomy and Physiology.	Geology.
Second Term.			Geology.
Third Term.			Astronomy.

*Senior Year.*

First Term.	{ Elective course from Science or from Psy- chology and Ethics.	{ Elective course from list of sciences given above, with the ad- dition of Geology.	Rhetoric, <i>De Mille</i> .
Second Term.			Rhetoric and Logic.
Third Term.			Logic, <i>Jevons</i> .

It will be observed that at the beginning of the Sophomore Year of the Bachelor of Science course an advanced course in science is to be selected from such branches as have been already studied in their elementary forms in either the Freshman Year or in the Preparatory Course. The choice at this time is therefore confined to the three following, viz., Botany, Chemistry, and Physics.

At the beginning of the Junior Year the list of electives is extended by the addition of Vertebrate Anatomy and Physiology, and at the beginning of the Senior Year by the addition of Paleontology, and also Philosophy and Ethics.

In the Senior Year of the courses for the degrees of Bachelor of Arts and Bachelor of Philosophy, there is also an election to be made by the student. In the former, he can choose from any of the sciences, the elements of which have been previously given, and also from History: in the latter, his election is confined to the sciences.

Rhetorical exercises are required of students in all the above-named courses throughout the Sophomore, Junior, and Senior Years.

#### (B.) TECHNICAL COURSES.

The courses for the special degrees of Civil Engineer, Mining Engineer, and Mechanical Engineer, agree with the course for the degree of Bachelor of Science for the Freshman Year. They also have several studies in common with all the courses already named, as will be seen by the schedules. The course for the degree of Bachelor of Agriculture differs to a considerable extent from the courses previously described.

## FOR THE DEGREE OF CIVIL ENGINEER.

*Sophomore Year.*

<b>First Term.</b>	<b>Surveying.</b>	<b>French.</b>	<b>Analytical Chemistry.</b>
<b>Second Term.</b>	<b>Descriptive Geometry.</b>	<b>French.</b>	<b>Analytical Chemistry.</b>
<b>Third Term.</b>	<b>Calculus.</b>	<b>French.</b>	<b>Analytical Chemistry.</b>

*Junior Year.*

<b>First Term.</b>	<b>Analytical Mechanics.</b>	<b>Geology.</b>	<b>Analytical Chemistry.</b>
<b>Second Term.</b>	<b>Mahan's Civil Engineering.</b>	<b>Geology.</b>	<b>Analytical Chemistry.</b>
<b>Third Term.</b>	<b>Astronomy.</b>	<b>Geology (Economic).</b>	<b>Analytical Chemistry.</b>

*Senior Year.*

<b>First Term.</b>	<b>Roads.</b>	<b>Physics.</b>	<b>Strength of Materials.</b>
<b>Second Term.</b>	<b>Drawing—Shadows and Perspective.</b>	<b>Physics.</b>	<b>Assaying.</b>
<b>Third Term.</b>	<b>Geodesy.</b>	<b>Physics.</b>	<b>Plans, etc.</b>

## FOR THE DEGREE OF MINING ENGINEERING.

*Sophomore Year.*

First Term.	Projection Drawing.	Surveying.	Analytical Chemistry.
Second Term.	Descriptive Geometry.	Mahan's Civil Engineering.	Analytical Chemistry.
Third Term.	Special Drawing.	Calculus.	Analytical Chemistry.

*Junior Year.*

First Term.	Geology.	Analytical Mechanics.	Analytical Chemistry.
Second Term.	Geology.	Metallurgy.	Analytical Chemistry.
Third Term.	Geology (Economic).	Metallurgy.	Analytical Chemistry.

*Senior Year.*

First Term.	Theory of Veins.	Metallurgy.	Strength of Materials.
Second Term.	Mining Engineering.	Plans, Specifications, and Estimates for Metallurgical Works.	Assaying.
Third Term.	Coal Washing and Mechanical Treatment of Ores.	Plans, Specifications, etc.	Mineralogy and Blow-pipe Analysis.

## FOR THE DEGREE OF MECHANICAL ENGINEER.

*Sophomore Year.*

<b>First Term.</b>	<b>Projection Drawing.</b>	<b>French.</b>	<b>Mechanical tory.</b>	<b>Labora-</b>
<b>Second Term.</b>	<b>Descriptive Geometry.</b>	<b>French.</b>	<b>Mechanical tory.</b>	<b>Labora-</b>
<b>Third Term.</b>	<b>Calculus.</b>	<b>French.</b>	<b>Mechanical tory.</b>	<b>Labora-</b>

*Junior Year.*

<b>First Term.</b>	<b>Geology.</b>	<b>Physics.</b>	<b>Analytical Mechanics.</b>
<b>Second Term.</b>	<b>Geology.</b>	<b>Metallurgy.</b>	<b>Mechanism.</b>
<b>Third Term.</b>	<b>Astronomy.</b>	<b>Metallurgy.</b>	<b>Mechanism.</b>

*Senior Year.*

<b>First Term.</b>	<b>Thermo-Dynamics.</b>	<b>Physics.</b>	<b>Strength of Materials.</b>
<b>Second Term.</b>	<b>Prime-Movers.</b>	<b>Physics.</b>	<b>Technical Drawing.</b>
<b>Third Term.</b>	<b>Mill-work.</b>	<b>Physics.</b>	<b>Technical Drawing.</b>



## FOR THE DEGREE OF BACHELOR OF AGRICULTURE.

*Freshman Year.*

First Term.	Surveying.	Mechanical Laboratory.	Chemistry.
Second Term.	Civil Engineering.	Mechanical Laboratory.	Chemistry.
Third Term.	Roads, Drains, etc.	Mechanical Laboratory.	{ Chemistry, 2-5. Mineralogy, 3-5.

*Sophomore Year.*

First Term.	Structural Botany.	Zoology.	Veterinary Anatomy.
Second Term.	Systematic Botany.	Zoology.	Veterinary Anatomy.
Third Term.	Economic Botany.	Zoology.	Veterinary Anatomy.

*Junior Year.*

First Term.	Soils, Manures, etc.	Geology.	Physiology.
Second Term.	Farm Crops and Tillage.	Geology.	Physiology.
Third Term.	Farm Improvement and Management.	Geology (Economic).	Physiology.

*Senior Year.*

First Term.	Domestic Animals - Varieties, etc.	Rhetoric.	Diseases of Animals.
Second Term.	Breeding and Feeding Stock.	Rhetoric and Logic.	Principles of Treatment.
Third Term.	Dairy Products.	Logic.	Particular Diseases.

The range of instruction in the several subjects named above is more particularly defined in the following statements of the work provided in the different departments of the University :

## DEPARTMENTS AND RANGE OF INSTRUCTION.

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### MATHEMATICS.

The preparatory department includes Algebra, Geometry, and Plane Trigonometry. In the Freshman Year, the subjects of Analytical Geometry, Differential Calculus, and Integral Calculus are taken up, and an additional term is subsequently given to the applications of Calculus in the Engineering courses.

### CIVIL ENGINEERING.

The order of studies in this department can be learned from the schedule which exhibits the course required for the degree of civil engineer.

*Text-Books.*—The works of Loomis on Algebra, Geometry, and Astronomy. In parts of the course, works by Davies, Warren, Church, Gillespie, Mahan, Haupt, Worthen, and others.

In addition to the use and study of the text-books, the students are taught and practiced in the use of various astronomical and engineering instruments—the level, the transit, the plane-table, the sextant, the globes. They have practical field-work throughout the year, excepting only when the inclemency of the weather does not admit of it. The work consists in taking differences of level, running lines, measuring horizontal and vertical angles, determining the variation of the magnetic needle, finding the latitude of the pole star and by meridian altitudes of the sun ; in fine, every variety of appropriate work which can be executed, is regularly, systematically, and thoroughly done.

### PHYSICS.

#### ELEMENTS.

The principles of Physics, or Natural Philosophy, is taught in two terms of the Preparatory Course. A text-book is used as a guide for four exercises each week, one exercise, each week, consisting of lectures illustrated with apparatus.

#### ADVANCED PHYSICS.

The full course of Advanced Physics occupies two years, embracing three kinds of exercises, as follows, first: Graphical and mathematical methods applied ; second—lectures on use of instruments, keeping notes, and reduction of observations ; and third—personal experimentation in which the student himself uses the apparatus of the laboratory.

## FIRST YEAR.

First Term—Graphics and Mathematics applied, four-fifths; Experiments, one-fifth.

Second Term—Physical Laboratory: Acoustics and Optics.

Third Term—Physical Laboratory: Heat.

## SECOND YEAR.

First Term—Physical Laboratory: Heat.

Second Term—Physical Laboratory: Heat and Electricity.

Third Term—Physical Laboratory: Electricity and Magnetism.

In the five terms last named, the student uses the instruments of the laboratory in reviewing the work of others; or in original research. There are also combined with this, lectures on proper manipulation and care in keeping notes as conducive to trustworthy results; also the theory of errors as regards instruments, reduction of observations, etc. The student is enabled to pursue his experiments thoroughly and extensively by means of the apparatus of the department, which includes many rare and valuable instruments.

*Works of Reference. Accessible to the Student.*—Atkinson's Ganot's Physics, Deschanel's Physics, Kohlrausch's Physical Measurements, Pickering's Physical Manipulations, Stewart's Heat, Jamin's Physique, Clark and Sabine's Electrical Tables and Formulæ, Higgs' Electric Lighting, Schwendler's Electric Testing.

## MECHANICAL ENGINEERING.

This course is intended for those who desire to prepare themselves either for the profession of Mechanical Engineering, for superintending the construction of machinery, or for managing machinery in manufacturing establishments. In it instruction in Principles is combined with practice. The former is mostly given by lectures, while the latter is confined to the Mechanical Laboratory.

The course includes the following special studies, all of which must be passed before taking the degree:

## MECHANISM AND DRAWING—ONE YEAR.

Principles of Mechanism.

Machine Designing and Drawing.

Machine Drawing.

## PRIME MOVERS AND MACHINERY—ONE YEAR.

Thermodynamics.

Prime movers.

Machinery and Mill-work.

Besides the above there will be required, for graduating:

Three terms of Elementary Laboratory Practice.

One term of Machine Construction in Laboratory.

One term of Strength of Materials.

## EXPLANATION OF THE COURSE.

In the Principles of Mechanism are studied the parts of machinery by pairs; or, elementary combinations of mechanism. In this the form and arrangement of the parts necessary for securing the desired modification of motion is sought.

In the Machine Designing the student takes up some problem in the shape of a particular machine for a special purpose. The forms, dimensions, and arrangements of the parts are decided upon, and then a drawing is carefully made of the whole. Detail drawings to regulation size are then made, and finished in shade lines, as done in the best shops. The quality of these drawings is sufficient for the requirements of photo-engraving for illustrations upon circulars.

In Thermodynamics are studied the principles which form the groundwork of all heat engines.

In Prime Movers are studied all kinds of heat engines, such as steam, hot-air, etc., and also wind and water-wheels.

Mill-work and machinery takes up valve-gears, fly-wheels, governors, efficiency of parts of machines, strength of parts, etc.

The Mechanical Laboratory is intended for acquainting the student with the materials used in machine construction; with the forms customary in machinery; to impart a degree of skill in the use of tools, and a knowledge of the operations and practices of shops.

The first term consists of the actual use of tools in executing a set of forms chosen, with a view to supplying the greatest possible amount of practical instruction for the time. This is combined with weekly lectures on tools and their use.

The second term carries the above practice to the fitting together of parts, and to the use of machine tools, such as the lathe, planer, etc. This is combined with weekly exercises in designing and drawing of machine elements, such as cranks, bearing-boxes, stub-ends, etc.

The third term is fully occupied in fitting parts carefully together, as in the joints of machinery, and in finishing the surfaces by scraping, polishing, burnishing, etc. This is in combination with a weekly exercise in the invention of simple machines for specific operations, such as bending wire staples, cutting wooden combs, etc.

The fourth term of Mechanical Laboratory practice is constructive. It is taken in connection with the principles of mechanism. In the latter, problems in mechanism are worked out, forms and dimensions assigned to the parts, and then these are executed in the Laboratory, resulting in models of mechanical movements for the cabinet.

Projects will be assigned to the student, from time to time, on topics connected with his studies, requiring him to take indicator cards, test the efficiency of boilers, visiting manufacturing establishments, etc., and report. Such reports should be neatly made out on the regulation papers of the Department. These will be taken, in part, for the examinations, and retained for the cabinet.

*Text-books and Works of Reference.*—Rankin's Steam Engine, and Machinery and Millwork; Weisbach's Mechanics; Willis's Principles of Mechanism; Belanger's Cinematique; Zeuner's Traité de la Chaleur; Neville's Hydraulics; Clausius and McCulloch on Heat; Sellers' Manual of Machine Tools; Shelley's Workshop; Unwin's Elements of Machine Design; Nicholson on Files and Filing.

## CHEMISTRY.

All students who wish to obtain a degree are required to study Chemistry for two and two-fifths terms. During this time General Chemistry, together with its most important applications to the arts, is taught by the use of text-books and of lectures, illustrated, by an ever-growing collection of the materials used in manufactures, and by a very complete suite of experiments.

After the completion of this elementary course, those who desire to devote special attention to Chemistry enter the analytical laboratory, where they can carry on their work for two years or more. This laboratory work is *required* only of students in Civil Engineering and in Mining. Any other student may enter the laboratory if his time and his strength permit.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy. He is also employed in making various compounds, and, if his time permits, studies exhaustively one or more of the elements and its important compounds.

The course of Quantitative Chemistry includes both the gravimetric and volumetric methods. The analyses are at first confined to those compounds whose structure is known, and afterwards extended to such bodies as the student may require in the special branch of the science to which he desires to devote himself. Opportunity is offered for the study of coals, ores, minerals, fertilizers, soils, or of the useful and waste products in manufactures.

If the student desires, he will also be assisted in taking up in detail topics which relate to Agriculture, to Pharmacy, to Medicine, and to other sciences, or to arts in which the principles of chemistry are applied. A full course of assaying is given in the Mining Laboratory, which is open also to students of chemistry.

A summary of the course is given below.

## REQUIRED OF ALL CANDIDATES FOR GRADUATION.

## GENERAL CHEMISTRY -TWO AND TWO-FIFTHS TERMS.

Inorganic and Organic Chemistry, and the applications of Chemistry to the Arts.

## SPECIAL COURSE.

## FIRST YEAR.

First Term—Qualitative Analysis: Exercises in Blow-pipe and Flame Reactions, Reactions in the dry way, Reactions of Single Bases and Acids.

Second Term—Qualitative Analysis continued: Determination of Mixtures, Blow-pipe Mineralogy, Preparation of Compounds.

Third Term—Quantitative Analysis, Stoichiometry, Review of General Chemistry throughout the year.

## SECOND YEAR.

Quantitative Analysis: Special studies in Chemistry applied to Pharmacy, to Agriculture, to Manufactures, and to the Arts.

*Text-Books.*—Norton's Chemistry, Fowne's Chemistry, Beilstein's Manual, Gallo-

way's Qualitative Chemistry, Will's Analytical Chemistry, Classen's Quantitative Chemistry, Fresenius's Quantitative Chemistry, Caldwell's Agricultural Chemistry.

*Books of Reference.*—Watt's Dictionary of Chemistry, Handwörterbuch des Chemie, Gmelin's Hand-Book of Chemistry, Wagner's Chemical Technology, Graham-Otto's Chemie, Rose's Analytischen Chemie, Hoppe-Seyler and Gorup-Besanez's Physiologischen Chemie, Elderhorst's Determinative Mineralogy.

### MINING AND METALLURGY.

The course in Mining Engineering secures to the student careful instruction, with ample allowance of time, in the three fundamental branches of the art—mining, preparation of the ore, and its metallurgical treatment. These courses will comprise lectures, the study of text-books, preparation of maps, drawings, and sections, and visits to existing works, with careful reports upon them, and practice in estimates and designs.

For Assaying, there is a full equipment of furnaces and ores for the dry assay, and the wet methods are taught in the chemical laboratory.

An ample collection of minerals is provided, comprising all species with which the mining engineer should be familiar, and to this the students have constant and familiar access.

Crystallography is taught by the aid of a complete collection of large wood models, made especially for the department, and containing every common form.

*Text-Books and Books of Reference.*—Dana's Mineralogy, Egleston's Crystallographic Tables, Callon's Mining, Andre's Mining and Mining Machinery, Phillips's Metallurgy, Egleston's Metallurgical Tables, Rittenger's Aufbereitung, Gætzschmann's Aufbereitung, Bodemann & Kerl's Assaying, Mitchell's Assaying, Von Cotta's Ore Deposits.

### GEOLOGY AND PALEONTOLOGY.

In the preparatory course one term is given to Physical Geography. In all of the college courses two terms of General Geology are required, and in two of the engineering courses a third term is added, in which the subject of Economical Geology is taken up. The former subject is provided for in the first and second terms of the Junior year, and the latter in the third term of the same year.

Le Conte's *Elements of Geology* is made the basis of the instruction in the general course; Economical Geology is taught by lectures.

Students desiring to pursue Geology further can elect it as one of their studies throughout the Senior year. In this year, particular attention will be given to the Geology and Paleontology of Ohio, for the illustration of which subjects the museum affords ample materials. These subjects will be taught by lectures, by practical work in the museum, and as far as possible by field practice.

*Text-books and Works of Reference.*—Le Conte's *Elements of Geology*, Dana's *Manual of Geology*, Lyell's *Principles of Geology*, Nicholson's *Manual of Paleontology*, Geological Reports of Ohio and other States.

## AGRICULTURE AND BOTANY.

There are three years of work provided for the student in the department of Agriculture. In the first year, Soils are made a subject of examination, their geologic relations and origin are explained, their composition is shown, and how it is determined; the special adaptations of soils to particular crops and modes of culture is shown, and how to increase or restore exhausted fertility; the management of pastures and meadows; the character and value of the different grasses, clovers, and other forage plants; the culture of field crops, such as corn, wheat, oats, barley, rye, potatoes, etc.; also the value and application of animal manures, marl, gypsum, wood-ashes, lime, superphosphate, guano, and city sewerage.

The work named above occupies the first and second terms. During the remainder of the year the following subjects are treated: Work of the farm and improvements; Drainage, draining tools, and the manufacture of drain-tiles; Irrigation, its value and methods; Farm Roads, and how to make them; Fences, material, construction, and cost; Rural Architecture, applied to the erection of farm-houses, barns, stables, etc.; Farm Machinery.

The second year is mainly spent on the following topics: The natural history, description and adaptation of the various domestic animals—horse-training, cattle-feeding, dairy management, wool-growing, etc.

The work of the third year is spent on the general subject of Veterinary Medicine. The range of instruction can be learned from the topics named below: General principles, Causes, Symptoms, Elements of Disease; Classification of Diseases, Principles of Treatment, and Remedial Agents; Particular Diseases and Operations. These are carefully studied, and, so far as opportunity can be obtained, diseases are treated, and operations made, under the inspection of the class.

In Botany, a term of elementary instruction is provided in the preparatory course. The general facts of vegetable structure and classification are here treated. In the Sophomore year, another term is occupied in a course of lectures on Economical Botany. The above-named work is required of all candidates for the general degrees of the University. For students who desire more extended instruction in this subject a course of one year is provided, in which the three subjects named above, viz., Structural, Systematic and Economical Botany, are treated in more detail. This year's work is elective for any candidate for the general degrees, and is required of students seeking the degree of Bachelor of Agriculture.

## ZOOLOGY AND COMPARATIVE ANATOMY.

The work of this department comprises the study of animal life, alike from the anatomical and the physiological aspect. Preparatory students receive, during the first term of their second year, instruction in this department in the elements of human anatomy and physiology. It is the object of this instruction to impart to these students such general knowledge of the structure and functions of their own bodies as will serve as a guide to their maintenance in a state of health and usefulness. Huxley's Lessons in Elementary Physiology will be used as a text-book, accompanied by lectures and by anatomical and histological demonstrations.

All students who are candidates for bachelor's degrees receive instruction in Zoölogy during their sophomore Year in this department. This instruction will be



by lectures, with collateral reading, demonstrations, and such laboratory exercises as the size of the classes from year to year will permit, and will have for its object to impart to the student a clear conception of the animal kingdom as a whole rather than a mere technical familiarity with one of its lesser divisions, to illustrate the objects and methods of classification, to indicate the more important of those morphological relations on which all intelligent classification is based, and to give some insight into those principles which underlie all the phenomena of animal life. All the classes of the animal kingdom (as well as the orders of the more important classes) will receive consideration, but the larger proportion of the student's attention will be directed to the classes and order of the invertebrata, partly because they include those forms least likely otherwise to come under their observation, and partly because a whole year may be afterwards given, by those who wish, to the study of the vertebrates.

At the beginning of the Junior Year, students who are candidates for the degree of Bachelor of Science have open to their election in this department a year of work in the comparative anatomy of vertebrates that may be antecedent to the special work in palæontology of the department of geology, or to a year of special work in physiology in this department, both of which are elective studies in the senior year. The work in vertebrate anatomy will be chiefly performed in the laboratory and the dissecting-room of the department, supplemented by lectures and such collateral reading as may from time to time be indicated.

To such Seniors as have performed the work in anatomy just described, and to no others, the advanced work in physiology and histology already referred to will be open. This will include lectures, demonstrations, and laboratory exercises in physiology, accompanied by a course of laboratory training in the facts and methods of histology. Foster's Text-Book of Physiology and Frey's Compendium of Histology will be used as text-books, and Foster and Langley's Practical Physiology and Schäfer's Histology as laboratory manuals.

Students who are candidates for the degree of Bachelor of Agriculture will receive instruction in this department, during their Sophomore Year, in Veterinary Anatomy. The greater portion of this time will be spent in the dissecting-room, Chauveau's Anatomy of the Domestic Animals being used as a manual. This will be followed in their junior year by the advanced work in physiology and histology already described.

The various classes of the department will be open to all special students who give satisfactory evidence of their fitness to enter them, and the facilities of the department will be freely afforded to all such who wish to pursue any special line of study connected with it.

#### DEPARTMENT OF ENGLISH AND MODERN LANGUAGES.

It is no longer a question that a thorough knowledge of the English language and literature, as they are, requires a knowledge of them as they were in the several stages of their growth, beginning with the beginning, Anglo-Saxon. The following course is, accordingly, a progressive, historical one:

First Term—Anglo-Saxon (Sweet's Anglo-Saxon Reader).

Second Term—Middle English (Chaucer's Prologue, Knight's Tale, etc., Clarendon Press edition).



Third Term—Modern English—Shakespeare (Hamlet, Hudson's edition ; Tempest, Clarendon Press edition).

Besides these text-readings, lectures, historical and critical, upon literature, run throughout the year.

Rhetoric and logic belong to this department, and our year is divided about equally between them. Rhetoric, taught for its value both as an aid to original production and to the just criticism and enjoyment of the works of others, runs through the first term and into the second. The remainder of the second term and all of the third are devoted to logic, taught—first, as the foundation and all-controlling, though often hidden, law of all good thinking and writing; second, for its bearing upon the several sciences taught in the University; third, as indispensable in aid of philosophy and a course of philosophical reading; fourth, as a discipline for the mind, than which there is no better.

First Term—Rhetoric: De Mille's Elements.

Second Term—Rhetoric finished; Logic.

Third Term—Logic: Jevon's Elements.

Much of the instruction of this year is oral, either in the shape of formal lectures or daily expansions and illustrations of the text-books. A special course of fifteen lectures on Poetry supplements the text-book on Rhetoric, and from the beginning to the end of the course in Logic, lectures are given, notes of which are taken and recited from.

*Books recommended for Reference.*—Marsh: Lectures on Origin, and History of English Language; Lectures on English Language and Literature; Taine's and Craik's Histories of English Literature; Morris: English Accidence; Grein; Angelsächsische Bibliothek; Earl: Philosophy of the English Tongue; Hamilton's Lectures on Logic; Thomson's Outlines of the Laws of Thought; Mansell's Prolegomena Logica and Edition of Aldrich's Logic; Ueberweg's System der Logik; Quintilian's Institutes, Theremin's Rhetoric; Kames' Elements of Criticism; Hepburn's Manual of Rhetoric.

## GERMAN AND FRENCH.

In view of the fact that mental training is a chief aim of every part of a college course; that, for purposes of literary culture, the main thing a college can give is the easy reading and accurate understanding of the masterpieces of the language studied; and that in an institution in which the sciences are so prominent as they are with us, it is of the utmost importance that the ability to use foreign text-books and works of reference be acquired as soon as possible, the so-called "Conversational Method" is not employed, and "learning to speak" French and German is an incident rather than an aim of the course. This is of purpose, and according to the best college usage and authority. I believe, too, that the careful and continuous use of the grammar, lexicon, and well-chosen text, with constant practice in composition, is the only sure and usually the shortest road to accurate and fluent speech. Where small classes, with little else to do, can spend several hours each day with the teacher, a different method will often succeed; but in a college, and to meet the ends of a college, more and better results are secured by the grammatical and literary method. Give the student an accurate knowledge of the inflections and syntax of a foreign

language; make him master of a full and idiomatic vocabulary of its words; let the reading of varied and well-selected texts teach him the peculiarities alike of the thought and rhythm of the speech of the men whose works he studies; accustom him to the oral and written rendering of the foreign text into English, and of English texts in the foreign speech, and he will no longer be helpless in the presence of a foreign poem or text-book, and learning to speak will be easily learned and remembered.

A two years' course in each of the two languages is provided for. In either course the student attends mainly to grammatical doctrine and literal versions, at first, and to the literary contents and characteristics of what he reads as he progresses. Lectures upon the respective literatures run through the second year of the courses.

## GERMAN.

### FIRST YEAR.

First and Second Terms—Steiger's Revised Edition of Ahn's Method.

Third Term—Schiller's *Der Neffe als Onkel*: Composition.

### SECOND YEAR.

First Term—Goethe's *Egmont*; Lessing's *Nathan der Weise*.

Second Term—*Nathan der Weise* finished; Richter's *Quintus Fixlein*.

Third Term—*Quintus Fixlein* finished.

## FRENCH.

### FIRST YEAR.

First Term—Duffet: *French Grammar and Exercises*.

Second Term—Grammar continued; Masson's *French Classics*, vol. 5.

Third Term—*French Classics* continued.

### SECOND YEAR.

First Term—Moliere: *Les Fourberies de Scapin*; Racine: *Athalie*.

Second Term—Corneille: *Cinna*; Racine: *Andromaque*; Bridge's *History of French Literature*.

Third Term—Feuillet: *Le Roman d'un jeune homme pauvre*; Bridge's *History* continued.

*Books of Reference*—For German: Vilmar's *Literatur Geschichte*; Wackernagel's *Geschichte der Deutschen Literatur*; Hosmer's *Hist. of German Literature*; Bayard Taylor's *Sketches of German Literature*.

For French—Brachet: *Grammaire Historique*; Chevallet; *L'Histoire de la langue Francaise*; Vinet: *L'Histoire de la Literature, du xviieme Siecle*; Parton: *The French Parnassus*; Van Laun: *History of French Literature*.

## LATIN LANGUAGE.

The course in Latin includes two years of preparatory work, and two years of regular college work. The preparatory course is designed for beginners, and those

who have had irregular and partial training, and thus can not compete successfully in the college work with those who have been systematically taught in high schools.

The course of study is arranged as follows:

### PREPARATORY LATIN.

#### FIRST YEAR.

First Term—Leighton's Latin Lessons.

Second Term—Leighton's Latin Lessons; Cæsar, *De Bello Gallico*, Book I.

Third Term—Cæsar, *De Bello Gallico*, Books I and II.

#### SECOND YEAR.

First Term—Virgil's *Æneid*, Books I, II, and III.

Second Term—Virgil's *Æneid*, Book IV; Cicero *In Catilinam* I, II.

Third term—Cicero *In Catilinam*, III, IV; *Pro Archia Poëta*.

### COLLEGE COURSE.

#### FRESHMAN YEAR.

First Term—Livy, Books I and XXI.

Second Term—Cicero, *De Senectute*, *De Amicitia*.

Third Term—Horace, Odes.

During the year lectures are given on Roman History, and the reading of the authors is accompanied with exercises in Latin prose composition, and in written translation.

#### SOPHOMORE YEAR.

First Term—Horace; Satires, Epistles, and *Ars Poëtica*.

Second Term—Tacitus, *Germania* and *Agricola*.

Third Term—Plautus, *Captivi*; Terence, *Andria*; Quintilian, *Institutio Oratorica*.

Lectures are given during the year on the Latin language and literature.

Allen and Greenough's Grammar is used throughout the entire course.

Candidates for admission to the Freshman class are examined in Latin Grammar (Allen and Greenough's preferred); Latin composition; three books of Cæsar's *De Bello Gallico*; five orations of Cicero, and four books of Virgil's *Æneid*.

### GREEK LANGUAGE.

The course in Greek now includes three years of college work, and is arranged as follows:

#### FRESHMAN YEAR.

First Term—Leighton's Greek Lessons.

Second Term—Greek Lessons completed; Xenophon's *Anabasis*, Book I.

Third Term—Xenophon's *Anabasis*, Books II and III.

## SOPHOMORE YEAR.

First Term—Xenophon's *Memorabilia*; Plato's *Phædon*.

Second Term—Herodotus, Selections; Greek History.

Third Term—Euripides, *Alcestis*.

Lectures are given during the year on Greek History, Antiquities and the Drama.

## JUNIOR YEAR.

First Term—Homer's *Odyssey*.

Second Term—Sophocles, *Edipus Tyrannus*.

Third Term—Demosthenes; *Olynthiacs and Philippics*.

Lectures are given during the year on the Greek language and literature. Exercises in Greek prose composition constitute an important feature of the course. Goodwin's Greek Grammar is used throughout the entire course.

## HISTORY AND PHILOSOPHY.

Elementary instruction in United States and General History is afforded in the Preparatory Course. One year of Advanced History is provided. This course is required of candidates for the degree of Ph.B., and is elective for the degree in arts. The subjects which receive attention during the year are: The History of the Middle Ages, The History of Modern Europe, and The Constitutional History and Civil Polity of the United States.

The instruction is by text-books and lectures, to which special work for the class is added. The results of the special study performed by each student are embodied in theses, which are read before the class.

The course in Philosophy extends through one year, embracing Psychology, History of Philosophy, and Ethics. It is required for the degrees in Philosophy and Arts, but is optional with candidates for the degree of B. S. A knowledge of the laws of thought and moral action is the end toward which the instruction in this course is directed. At the same time the history of Philosophy receives a large share of attention.

The work in these subjects is distributed as follows:

## HISTORY.

## PREPARATORY COURSE.

*First Year.*

Second Term—United States History (Eliot).

Third Term—General History (Freeman).

## COLLEGE COURSE.

*Advanced History.*

First Term—The Middle Ages; text-book, Hallam. Lectures, especially on the English Constitution.

Second Term—Modern Europe; text-book, C. D. Yonge's *Three Centuries of Modern History*. Lectures on the present condition of the Great Powers.

Third Term—Constitutional History and Civil Polity of the United States. Lectures.

### PHILOSOPHY.

First Term—Principles of Psychology; lectures on the History of Philosophy.

Second Term—Principles of Psychology; lectures on the History of Philosophy.

Third Term—Ethics; lectures on the History of Ethics.

*Text-books and works of reference*—The histories by Hallam, Sheppard, Sismondi, Gibbon, Martin, Von Sybel, Thiers, Alison, Motley, Dunham, Von Raumer, Von Ranke, Gervinus, Savigny, Bryce, Green, Freeman, Hume, Macaulay, Turner, Stubbs, May, Seeley, Arndt, etc., etc.

*Constitutional History of the United States*—Curtis' History of the Constitution; Von Holst's Constitutional History of the United States; Frothingham's Rise of the Republic; the Federalist; the works of Adams, Hamilton, Jefferson, Madison, Webster, and Elliot's Debates.

*Psychology*—Porter, Hamilton, Kant, Carpenter, Spencer, Bain, Maudsley.

*History of Philosophy*—Schwegler, Ueberweg, Lewes, and Bowen.

*Ethics*—Bascom, Calderwood, Spencer.

### PROVISIONS FOR SPECIAL STUDENTS.

To students entering the University for the purpose of taking some special study, and who do not propose to complete a regular course, *full freedom in the selection of the branches which they will pursue is granted, subject only to the necessary limitation that they are prepared to take up with advantage the studies which they select.* They will enter the classes organized for the regular courses, and they can not be allowed to impair the quality of work done in the classes through their own inadequate preparation. Advanced students will find every facility for special work. The preliminary examinations are required of special students.

### PROVISION FOR INSTRUCTION IN AGRICULTURE.

The University recognizes its obligations, imposed in the terms of the grant on which it is founded, to the great industrial interest of agriculture. This obligation it aims to meet in various ways. It fixes its standard of admission so that students may enter its classes from the common schools. It provides for thorough instruction in the branches of science on which Agriculture depends. It has established a professorship of theoretical and applied Agriculture. It has established a professorship of Botany and Horticulture. It has laid down a special course leading to the degree of Bachelor of Agriculture. It has instituted courses of lectures in the sciences relating to Agriculture and in theoretical Agriculture, to which the farmers of the State are invited without charge.

While it is believed that the varied and complex questions with which the farmer has to deal, justify and require, for their most successful treatment, the extended and thorough courses of study necessary for the degree of Bachelor of Agriculture, it is still recognized that comparatively few will return from a six years' course of study to the farm again, and, therefore, all possible advantages are offered to young

men from the country who enter the institution for a shorter time. The work of the department of Agriculture is shaped so as to give to this class as large a measure of service as possible for whatever time they are on college ground.

#### LITERARY SOCIETIES.

There are two Literary Societies in the University, the *Alcyone* and the *Horton*. Both are provided with rooms in the University building, the equipment of the *Alcyone* hall having been mainly furnished through the generosity of the late John G. Deshler, of Columbus. The Societies are vigorous and effective, and furnish to the student a very desirable training in public speaking and parliamentary order.

# ADMISSION.

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## I. TO THE PREPARATORY DEPARTMENT.

For admission to the Preparatory Department of the University, students must pass a satisfactory examination in the branches taught in the common schools, viz.: Reading, Orthography, Writing, Grammar, Geography, Arithmetic, and Algebra through simple equations.

The attention of those proposing to enter the University is especially directed to the terms above given. A competent knowledge of the common school branches is required. The University does not undertake to do the work which the common schools are able and willing to do, viz., that of grounding the student in the elements of an English education. He must bring with him a fair measure of the training which these schools are prepared to give. If it be asked what is a competent knowledge of these branches, it may be answered that the candidate should certainly have knowledge enough of them to entitle him to a teacher's certificate from a county board of examiners.

Graduates of the high schools of the State are admitted to the Preparatory Department without examination. Applicants having a teacher's certificate of twelve months, are also admitted without examination, except in Algebra, where this study is not included in the certificate.

## II. TO THE COLLEGE CLASSES.

For admission to the Freshman Class of any course, the student must sustain examination in the studies of the Preparatory Department, that lead to this course. The Preparatory Department, as now constituted, agrees very well with the courses of instruction in the better grade of high schools of the State. The full requisitions, then, for admission to college standing, are as follows:

English Grammar,  
Common School Geography,  
Physical Geography,  
Arithmetic,  
Algebra,  
Geometry,  
Trigonometry,

Botany,  
Physics,  
Human Physiology,  
United States History,  
General History,  
Latin or German, to the amount of a  
two years' course.

Graduates of high schools of this State, in cities having a population of 5000 or more, by the census of 1870, and of such other high schools and academies of the State as give satisfactory evidence to the faculty of the efficiency of their courses of study, will, on presenting their diplomas, be admitted to the Freshman Class, in any course of study for which their previous high school work shall have fitted them.

Students who do not design to complete a regular course of instruction, are allowed to select such studies as they are prepared to carry on with profit to themselves and without detriment to the regular classes.

Students are admitted to advanced standing in any of the courses, on their sustaining examination in the work required in the University for such standing.

Students entering from other colleges are required to bring certificates of honorable dismissal.

The University is open to students of both sexes, but there no buildings provided for the residence of young ladies on the College grounds. Boarding-places, in respectable families, are secured for such young ladies as enter the institution, but the faculty is not so situated that it can exercise supervision over their conduct outside of College hours. Parents, who place their daughters in the University, should be well satisfied as to their discretion, or else should leave them under the care and control of the family with which they board.

### EXPENSES.

1. *College Dues*.—A charge of \$5.00 a term, or \$15.00 a year, is made against all students, under the head of incidental expenses. *There is no charge for tuition in any department of the University*; but advanced students in Chemistry and Physics are required to pay fees to cover, in part, the cost of materials consumed, and the deterioration of the expensive instruments employed. The fee in the Chemical Laboratory is \$10.00 per term, and in the Physical Laboratory \$7.00 per term. These dues are required at the opening of each term.

2. *Board*.—There are two dormitories on the College grounds, provided for the use of students. The smaller of these provides unfurnished rooms, *rent free*, to such students as desire to board themselves, and thus to reduce their expenses to a minimum. Twenty students can be accommodated in the building, two students being assigned to each room. The expense of living in this way falls below \$2.00 per week.

The larger dormitory can accommodate seventy students. It is, for the present, turned over to the University club, *rent free*. Board, furnished room, fuel, light, and washing are, at present prices, supplied for less.



than \$3.00 per week. New students will not, however, be admitted to the club without special recommendation.

Boarding-clubs are, also, frequently organized in the neighborhood of the College, by students, in which expenses are kept at \$3.50 per week, or even lower.

Board, with furnished rooms, can be obtained in private families within convenient distances of the College, at rates varying from \$3.50 to \$5.00 per week. The ruling rate may be taken as \$4.00 per week for young men, and \$4.50 for young ladies.

Free access to the College is secured by two lines of street railroads, which connect it with the central portions of the city.

There is a large amount of work on the College farm that can be performed to advantage by students, and for which they are paid at the current rates for such labor. A number of students defray all their college expenses by such labor. In the assigning of work, preference is given to students in the department of agriculture, and to those who are ready to devote a certain number of hours each day to the tasks required. *The University does not guarantee work to all applicants.*

A college uniform has been adopted, with which all members of the military organization are required to provide themselves. The cost of the uniform is about \$25.00.

SUMMARY.

The expenses of a college year of thirty-eight weeks, will include the following items, viz.:

College dues.....	\$15 00	\$15 00
Board, room, etc., at \$3.00 per week.....	114 00	at \$4 50 171 00
	<hr/>	<hr/>
Total .....	\$129 00	\$186 00

This estimate provides for light, fuel and washing, but does not include text-books nor charges for laboratory supplies. Students boarding themselves can reduce the lowest of these estimates by at least \$30—making a total of \$100.

RULES AND REGULATIONS.

The following rules and regulations, among others, are now in force in the University:

STANDING.

1. The standing of students shall be reported at the end of each term as “passed with merit.” “passed,” “conditioned,” or “failed;”

such standing to be determined by examination, written, wherever possible.

2. The expression "conditioned" signifies "subject to re-examination at the middle of the following term."

3. No student is allowed to take less than three, or more than four studies; and no student conditioned in any study will be permitted to take more than three studies the following term.

4. Students must pass in at least two of the studies of each term, in order to retain their place in college.

5. Students conditioned in more than one study, must pass a satisfactory examination in one of these studies before regaining their place in college.

6. Students failing in two of the studies of a term, forfeit their place in college thereby.

7. Students who fail in the term examinations, or in an examination for conditions, are required to take the study or studies in which they fail, on their occurrence, in the following year, except when excused by the faculty.

8. Students failing on a re-examination for a condition, are dropped from that class, if a continuous one.

9. Absence from any examination is construed as a failure therein.

10. Students in any three-term class who fail to attain the grade "passed" at the end of more than one term, shall be required to repeat the work of the whole year, unless excused by the professor in charge; and the students in any two-term class who are reported as "failed" at the end of the second term, may be required by the professor in charge to repeat both terms' work.

#### DEMERITS.

1. Absence and tardiness may be excused by the President; failures, by the professors in whose classes they occur.

2. Four demerits shall be recorded against a student for every unexcused absence from a class; two for every unexcused failure in recitation, and one for every unexcused tardiness; and other offenses shall be rated as the faculty shall, from time to time, determine.

3. When any student has received ten demerits in any one term, or twenty-five in the first two terms, or thirty in the year, notice thereof shall be sent to the parent or guardian of such student.

4. Any student who receives twenty demerits in any one term, thereby forfeits his connection with the college; and any student re-

ceiving thirty-five demerits in the first two terms, or forty in the year, forfeits his connection with the college.

#### TERM BILLS.

The payment of term bills is required of all students by the second Wednesday of each term, as the condition of remaining in college.

## CALENDAR.

The Winter term commences on Thursday, January 6, 1881, and continues 12 weeks, closing on Wednesday, March 30.

The Spring term commences on Thursday, April 7, and continues 11 weeks, closing on Wednesday, June 22, (Commencement Day).

The Fall term commences on Thursday, September 14, and continues 14 weeks, closing on Wednesday, December 21.

## CATALOGUE OF STUDENTS.

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The following catalogue includes the names of students in attendance between November 1, 1879, and November 1, 1880.

The under graduate students of the University are arranged in the four following divisions, viz.:

- (1.) Regular Students.
- (2.) Special Students.
- (3.) Preparatory Students.
- (4.) Unclassified Students.

The first division includes the four college classes; the second includes students who have attained college rank by completing the preparatory course or its equivalent, but are now pursuing selected studies; the third division includes the students that are pursuing the regular preparatory course; while the fourth includes all other students.

### GRADUATES—JUNE, 1880.

Edwin E. Corwin, A.B.  
Arthur Cunningham, A.B.  
Hiram D. Gregory, M.E.  
J. Paul Jones, A.B.  
John H. McCormick, Mech. Eng.  
Sidney H. Short, B.S.  
Florizel Smith, A.B.  
Alice M. Townshend, A.B.  
John C. Ward, A.B.

### CERTIFICATE OF PROFICIENCY—JUNE, 1880.

Katherine A. Mathew (in English Literature, French, German and Drawing.)

### RESIDENT GRADUATES.

Ferdinand Howald, A.B.  
John H. McCormick, Mech. Eng.  
John L. Morrison, C. E. (University of Michigan).

## REGULAR STUDENTS.

Name.	Residence.	County.
SENIOR CLASS.		
Bates, Josephine M.....	Irwin.....	Union.
Cherryholmes, William K.....	Millersburg .....	Holmes.
Gill, Maggie H.....	Hilliard .....	Franklin.
Hyatt, Edward .....	Augusta .....	Carroll.
Lewis, Charles M.....	Circleville .....	Pickaway.
O'Brien, David.....	Worthington.....	Franklin.
Pool, Harwood S.....	New York City.....	
Wood, Kenneth D.....	Columbus .....	Franklin.
JUNIOR CLASS.		
Baker, Chauncey B.....	Osborne .....	Greene.
Brotherton, William .....	Cedarville .....	Greene.
Davis, Floyd.....	Ithaca, N. Y .....	
Fassig, Oliver L.....	Columbus .....	Franklin.
Fay, F. Willis.....	Columbus .....	Franklin.
Glover, Sioux.....	Hilliard.....	Franklin.
Hyatt, Harry .....	Augusta .....	Carroll.
Jones, Willis S.....	Big Prairie.....	Wayne.
Keffer, Frederick .....	Cleveland.....	Cuyahoga.
Makepeace, George D.....	Cleveland.....	Cuyahoga.
Marvin, Frederick .....	Columbus .....	Franklin.
Wilgus, Horace L.....	Conover .....	Miami.
SOPHOMORE CLASS.		
Bradford, Joseph N.....	Columbus .....	Franklin.
Donham, William W.....	Lindale .....	Clermont.
Downerd, Edward C .....	Zanesville .....	Muskingum.
Dun, George.....	Dublin .....	Franklin.
Dun, John.....	Dublin .....	Franklin.
Ely, William A .....	Elyria .....	Lorain.
Fitch, Eliza D.....	Columbus .....	Franklin.
Higbee, Charles E .....	Cleveland.....	Cuyahoga.
Howard, Charles J.....	Barnesville .....	Belmont.
Hubbard, Frederick.....	Columbus .....	Franklin.
Knopf, George.....	Columbus .....	Franklin.
Lovejoy, Jesse R.....	Columbus .....	Franklin.
McDowell, John A.....	Columbus .....	Franklin.
Miller, William H.....	McArthur .....	Vinton.
Robinson, Parl C.....	Kenton .....	Hardin.
Sperr, Frederick W .....	Jefferson.....	Ashtabula.
Shedd, Frederick .....	Columbus .....	Franklin.
Van Harlingen, E. M.....	Columbus .....	Franklin.
*Wilkinson, E. W. ....	Columbus .....	Franklin.

\* Deceased.

## REGULAR STUDENTS.—Continued.

Name.	Residence.	County.
FRESHMAN CLASS.		
Allen, Horace .....	Troy .....	Miami.
Ackerman, Eli O.....	Columbus .....	Franklin.
Ackerman, Fremont .....	Columbus .....	Franklin.
Anderson, James T.....	Columbus .....	Franklin.
Cunningham, Andrew.....	Columbus .....	Franklin.
Galbraith, John H.....	Columbus .....	Franklin.
Gaskill, David L.....	Greenville .....	Darke.
Green, Clarence C .....	Middleport .....	Meigs.
Henderson, Lutrelle.....	Marysville .....	Union.
Kienzle, Frank .....	Columbus .....	Franklin.
Malone, William R.....	Conneaut .....	Ashtabula.
Miller, Charles C.....	Baltimore .....	Fairfield.
Miller, Walter M.....	Portsmouth .....	Scioto.
Mix, Melvin N.....	Avenue .....	Franklin.
Orton, Edward, Jr.....	Columbus .....	Franklin.
Ray, William D.....	Harrisonville.....	Scioto.
Sabine, Annie W.....	Richwood.....	Union.
Wikoff, John B.....	Columbus .....	Franklin.
Stewart, Harlow L.....	Norwalk .....	Huron.
Slusser, Sarah A.....	Louisville .....	Stark.
Vanderburg, Charles R.....	Columbus.....	Franklin.

## SPECIAL STUDENTS.

Name.	Residence.	County.
Bates, Amelia.....	Irwin .....	Union.
Butler, Albert C .....	Columbus .....	Franklin.
Brown, Christopher N.....	Ironton .....	Lawrence.
Casey, J. Sheafe.....	Yellow Springs .....	Greene.
Claypole, Daisy C.....	Columbus .....	Franklin.
Davis, Horace S.....	Dayton .....	Montgomery.
Earl, Thomas M.....	Columbus .....	Franklin.
Flowers, Olive .....	Columbus .....	Franklin.
Helmick, O. D.....	Urbana.....	Champaign.
Hughes, John W .....	Columbus .....	Franklin.
Knopf, Eva.....	Columbus .....	Franklin.
Langfitt, William C .....	Millersburg.....	Holmes.
Longstreth, Edith E.....	Dayton.....	Montgomery.
Martin, Harry .....	Mt. Vernon.....	Knox.
McCullough, John C .....	Lima.....	Allen.
Moore, Henry C .....	Columbus .....	Franklin.
Mullay, Thomas .....	Columbus .....	Franklin.
Orton, Clara G.....	Columbus .....	Franklin.
Palmer, Charles O .....	Cleveland .....	Cuyahoga.
Reed, William F.....	Pomeroy .....	Meigs.
Spielman, John A.....	Tiffin .....	Seneca.
Streeper, Jacob D.....	Chillicothe .....	Ross.
Sweeney, Thomas D.....	Covington .....	Miami.
Swickard, Belle.....	Columbus .....	Franklin.

## PREPARATORY STUDENTS.

Name.	Residence.	County.
SECOND YEAR.		
Clark, J. William .....	Mechanicsburg .....	Champaign.
Bunn, Walter.....	Chillicothe .....	Ross.
Dann, Lyman R.....	Columbus .....	Franklin.
Dickey, Marcus R.....	Central College .....	Franklin.
Foster, Newton P.....	Sharonville .....	Pike.
Hanitch, Louis .....	Dayton .....	Montgomery.
Harrison, William H.....	Columbus .....	Franklin.
Hart, Elmer .....	Columbus .....	Franklin.
Heinlein, Andrew J.....	Bridgeport .....	Belmont.
Howard, Mary E.....	Westerville.....	Franklin.
Jones, James P.....	Big Prairie .....	Wayne.
Glover, Libbie.....	Hilliard .....	Franklin.
Lucas, Mary E.....	West Jefferson.....	Madison.
Morris, William D .....	Terre Haute, Ind .....	
Peters, William L.....	Columbus .....	Franklin.
Stevens, Claude J.....	Kenton.....	Hardin.
Terry, Harry K.....	Columbus .....	Franklin.
Thurston, Azor .....	Grand Rapids.....	Wood.
Wilfing, Charles J.....	Steubenville .....	Jefferson.
Vandevort, William P.....	Morrow .....	Warren.
FIRST YEAR.		
Adel, Charles S.....	Columbus .....	Franklin.
Allcott, Frank L .....	Columbus .....	Franklin.
Armstrong, Phillip D.....	Tippecanoe City .....	Miami.
Ashinger, Frank A.....	Upshur .....	Preble.
Beatty, George W.....	Columbus .....	Franklin.
Benham, Harry T.....	Columbus .....	Franklin.
Blankner, Fred.. Jr.....	Columbus .....	Franklin.
Braun, Charles N .....	Columbus .....	Franklin.
Brown, Colvin C .....	Cambridge .....	Guernsey.
Carlisle, Frank B.....	Hooker's Station.....	Fairfield.
Carroll, Clara.....	St. Clairsville .....	Belmont.
Chappelear, Samuel.....	New Lexington .....	Perry.
Conoway, John W .....	Arcadia .....	Hancock.
Converse, Edward J.....	Columbus .....	Franklin.
Cooke, Russel P.....	Chillicothe .....	Ross.
Crumley, Clarence M.....	Lancaster .....	Fairfield.
Cunningham, George S.....	Lancaster .....	Fairfield.
Davis, Charles H .....	Columbus .....	Franklin.
Devol, Laura.....	Marietta.....	Washington.
Devol, William S.....	Marietta.....	Washington.
Dozer, Martin T.....	Deavertown .....	Morgan.
Dun, Davis .....	Dublin .....	Franklin.
Dobyns, A. William.....	Hilliard .....	Franklin.
Eisenlohr, Berthold A.....	Dallas, Texas .....	
Evans, William H. S .....	Cincinnati.....	Hamilton.
Flannery, Michael J.....	Fairfield .....	Greene.
Gordon, John L.....	Worthington .....	Franklin.
Hileman, William T.....	Campbellstown .....	Preble.
Hill, Frank E.....	Neville .....	Clermont.
Houston, Frederick.....	Marysville .....	Union.
Howard, Horton.....	Alton .....	Franklin.
Jeffries, May A .....	Mifflinsville .....	Franklin.
Kizer, William L.....	Lancaster .....	Fairfield.



## PREPARATORY STUDENTS—Continued.

Names.	Post-Office.	County.
FIRST YEAR.		
Lindenberg, Louis B .....	Columbus .....	Franklin.
McClain, John A .....	West Lafayette .....	Coshocton.
McKinney, William H .....	Morrow .....	Warren.
Merion, Edwin .....	Columbus .....	Franklin.
Moore, Alvin A .....	Kenton .....	Hardin.
Munsey, William .....	Columbus .....	Franklin.
Negelspach, Otto .....	Millersburg .....	Holmes.
Neil William .....	Columbus .....	Franklin.
Nelson, Carlton T .....	Columbus .....	Franklin.
Nicklaus, Oscar .....	Logan .....	Hocking.
Oxer, Orange .....	Campbellstown .....	Preble.
Orr, James R .....	Chillicothe .....	Ross.
Parker, Edward E .....	Tymochtee .....	Wyandot.
Perry, Elmer E .....	Columbus .....	Franklin.
Peters, Harry B .....	Upper Sandusky .....	Wyandot.
Pfaff, Carl P .....	Columbus .....	Franklin.
Pleukharp, Charles .....	Columbus .....	Franklin.
Poland, August A .....	Columbus .....	Franklin.
Scott, Anna M .....	Columbus .....	Franklin.
Scott, May M .....	Columbus .....	Franklin.
Scott, Winfield .....	Columbus .....	Franklin.
Sabine, Wallace C .....	Richwood .....	Union.
Scheibell William .....	Columbus .....	Franklin.
Shafer, Benjamin .....	West Lafayette .....	Coshocton.
Shoemaker, Charles C .....	Columbus .....	Franklin.
Smith, Edmund S .....	Columbus .....	Franklin.
Stockwell, Harry .....	Columbus .....	Franklin.
Swickard, Charles R .....	Columbus .....	Franklin.
Sheperd, Jacob L .....	Osborne .....	Greene.
Terry, Harry K .....	Columbus .....	Franklin.
Thompson, Howard .....	Columbus .....	Franklin.
Thurston, Ella .....	Grand Rapids .....	Wood.
Tritt, William D .....	King's Creek .....	Champaign.
Veith, Veit .....	Columbus .....	Franklin.
Watt, Seru P .....	Jamestown, Neb .....	
Williams, Paul S .....	Scioto Furnace .....	Scioto.
Wilson, Roger C .....	Georgetown .....	Brown.

## UNCLASSIFIED STUDENTS.

Names.	Post-Office.	County.
Akin, Park H.....	Columbus.....	Franklin.
Allen, Charles.....	Washington C. H.....	Fayette.
Allen, Frank M.....	Washington C. H.....	Fayette.
Ambos, Peter.....	Columbus.....	Franklin.
Amy, Charles S.....	Payne's Corners.....	Ashtabula.
Baird, Lida M.....	Columbus.....	Franklin.
Barcus Flora.....	Columbus.....	Franklin.
Barcus, Harry.....	Columbus.....	Franklin.
Beach, Charles M.....	Kelloggsville.....	Ashtabula.
Beymer, Alvin.....	Columbus.....	Franklin.
Bingham Edward T.....	Columbus.....	Franklin.
Bohrer, James M.....	Baltimore.....	Fairfield.
Bromley, Robert H.....	Columbus.....	Franklin.
Brown, J. E.....	Cambridge.....	Guernsey.
Burnside, Charles F.....	Pataskala.....	Licking.
Campbell, Marius R.....	Atwater.....	Portage.
Campbell, Jackson R.....	New Harrisburg.....	Carroll.
Collins, Thomas K.....	Barnesville.....	Belmont.
Cooke, Paul.....	Chillicothe.....	Ross.
Cornell, Will B.....	Columbus.....	Franklin.
Coulter, Guy.....	Columbus.....	Franklin.
Courtright, Eugene.....	Lithopolis.....	Fairfield.
Creighton, William F.....	Malvern.....	Carroll.
Cresap, R. E. L.....	Logan.....	Hocking.
DeFord, A. Frank.....	Carrollton.....	Carroll.
Devol, Seldon S.....	Marietta.....	Washington.
Dickey, Clayton L.....	Central College.....	Franklin.
Donaldson, Eli G.....	Columbus.....	Franklin.
Downey, Mary.....	Iowa City, Iowa.....	
Dyer, David N.....	Galena.....	Delaware.
Eastman, John C.....	W. Alexandria.....	Preble.
Ehler Frederick.....	W. Alexandria.....	Preble.
Erskine, George G.....	Youngstown.....	Mahoning.
Erskine, James.....	Youngstown.....	Mahoning.
Fisher, David A.....	Kenton.....	Hardin.
Floyd, Stephen E.....	Wintersville.....	Jefferson.
Fox, Herman S.....	Brookville.....	Montgomery.
Fullington, Charles P.....	Irwin.....	Union.
Gibbs, Will. R.....	Troy.....	Miami.
Gibson, Mary.....	Elyria.....	Lorain.
Guainans, Emile F.....	Montbéliard, France.....	
Hamilton, Charles S.....	Columbus.....	Franklin.
Harsh, Lewis M.....	Commercial Point.....	Pickaway.
Hawkes, Frederic W.....	Columbus.....	Franklin.
Hawley, Will. E.....	Conneaut.....	Ashtabula.
Hershey, Harry.....	Union.....	Montgomery.
Hine, Lucius A.....	Milan.....	Erie.
Hinman, Charles D.....	Columbus.....	Franklin.
Hoge, Wilmer.....	Cambridge.....	Guernsey.
Hoshor, J. C.....	Logan.....	Hocking.
House, William D.....	Columbus.....	Franklin.
Howells, E. Stanton.....	Massillon.....	Stark.
Hull, Alice M.....	Columbus.....	Franklin.
Huston, Joseph E.....	West Alexandria.....	Preble.
Hutchinson, Mary.....	Columbus.....	Franklin.
Innis, Sarah G.....	Columbus.....	Franklin.
Jones, Jennette.....	Hilliard.....	Franklin.
Kenny, Minerva.....	Columbus.....	Franklin.
Kenney, Melvin P.....	Isle St. George.....	Ottawa.

## UNCLASSIFIED STUDENTS—Continued.

Name.	Post-Office.	County.
Keyes, Frank E.....	Columbus .....	Franklin.
Keyser, Isaac N.....	Columbiana.....	Columbiana.
Kinnear, Edward .....	Columbus .....	Franklin.
Kridler, William H .....	Columbiana.....	Columbiana.
Lakin, Milton C.....	Marble Cliff.....	Franklin.
Law, George W.....	Willoughby .....	Lake.
Lehner, Emma .....	Mifflinville.....	Franklin.
Lovejoy, Ellis .....	Columbus .....	Franklin.
Marshall, Anna.....	Marietta .....	Washington.
Marple, Charles A .....	Columbus .....	Franklin.
Martin, Walter H.....	Columbus .....	Franklin.
Marvin, Eva.....	Columbus .....	Franklin.
McDannald, C. E.....	Central College.....	Franklin.
McDonald, Edgar.....	Coshocton .....	Coshocton.
McEwen, James H.....	Wellsville, N. Y.....	
McFarlin, W. K.....	Coitsville.....	Mahoning.
Mead, Charles V .....	Jefferson .....	Ashtabula.
Moigan, Charles F.....	King's Creek .....	Champaign.
Morrow, R. H.....	Steubenville .....	Jefferson.
Morton, George L.....	South Newberg .....	Geauga.
Morton, James W.....	Mt. Ephraim.....	Noble.
Myers, Noah .....	North Hampton.....	Clarke.
Newlove, William J.....	Columbus.....	Franklin.
Overholser, Henry .....	Alpha .....	Greene.
Packard, William D.....	Warren.....	Trumbull.
Paul, Charles A.....	Norwalk .....	Huron.
Phenegar, Parker W .....	Columbus .....	Franklin.
Pleukharp, Ella.....	Columbus .....	Franklin.
Pugsley, Harry.....	New Lexington .....	Perry.
Ramsay, William E.....	Delta .....	Fulton.
Richards, J. W. ....	Columbus .....	Franklin.
Reichenbach, Emanuel.....	Apple Creek.....	Wayne.
Rodgers, James L.....	Columbus .....	Franklin.
Root, Willis J .....	Leon .....	Ashtabula.
Royce, Walter A.....	Columbus .....	Franklin.
Sawyer, D. W. C., Jr.....	Columbus .....	Franklin.
Scott, Mary O.....	Columbus .....	Franklin.
Scurry, James .....	Columbus .....	Franklin.
Searle, Alice E.....	Berkshire.....	Delaware.
Selby, Augustus D.....	Bartlett.....	Washington.
Sharp, Zula M.....	Clintonville .....	Franklin.
Sinift, Orin V.....	Rushville .....	Fairfield.
Smith, Guy.....	Elyria .....	Lorain.
Smith, Lot L., Jr .....	Columbus .....	Franklin.
Smith, Philo C.....	Canton .....	Stark.
Snyder, David F.....	Springfield.....	Clarke.
Spurgeon, Mattie A.....	Clintonville .....	Franklin.
Stimmel, J. Turner.....	Columbus .....	Franklin.
Stubert, Frank K.....	Richwood .....	Union.
Shoemaker, Charles C.....	Columbus .....	Franklin.
Tarbell, David S.....	Georgetown.....	Brown.
Taylor, Frank. ....	Columbus .....	Franklin.
Thomas, John J.....	Columbus .....	Franklin.
Thompson, Owen P .....	Atwater.....	Portage.
Touvelle, William E.....	Celina .....	Mercer.
Turley, Charles L.....	Portsmouth .....	Scioto.
Uhler, Harry L.....	Marion .....	Marion.
Wade, William .....	Columbus.....	Franklin.
Waid, Lemuel F.....	Emery.....	Fulton.

## UNCLASSIFIED STUDENTS—Continued.

Name.	Post-Office.	County.
Warner, Cora.....	Chillicothe.....	Ross.
Wear, George W.....	Marengo.....	Morrow.
Wellons, James W.....	Barnesville.....	Belmont.
Westfall, Lafayette.....	Covington.....	Miami.
Whetzel William A.....	Harveysburg.....	Warren.
Whitten, William.....	Columbus.....	Franklin.
Willard, Charles P.....	Columbus.....	Franklin.
Wilson, Stonewall J.....	Clarksburg, West Virginia.....	
Wright, Clarence H.....	Athens.....	Athens.
Wright, James M.....	Fredonia.....	Licking.

## TREASURER'S REPORT.

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COLUMBUS, OHIO, *November 16, 1880.*

HON. STEPHEN JOHNSTON, *Chairman of the Board of Trustees of the Ohio State University:*

DEAR SIR: I hand you herewith my tenth annual report of the financial transactions of the Ohio State University, for the fiscal year which closed yesterday.

This report, the same as that of last year, embraces—

I. A general cash statement, showing the receipts, expenditures, and balances of cash.

II. The cash transactions pertaining to the sale of the Virginia Military Lands from 1871 to date.

III. A statement showing the condition of the Endowment Fund, held by the State of Ohio, and pledged to the support and maintenance of the Ohio State University.

IV. A full statement of the cash received from whatever source, into my hands.

V. A detailed list of disbursements during the year.

Very respectfully,

HENRY S. BABBITT, *Treasurer.*

## STATEMENT I.

A GENERAL STATEMENT OF CASH ACCOUNTS FOR THE FISCAL YEAR ENDING NOVEMBER  
15, 1880.HENRY S. BABBITT, *Treasurer, in account with the Ohio State University:*

Dr.

Nov. 16, 1879. To balance of cash on hand..... \$4,986 92

To cash from the following sources, viz.:

From State treasury on account of  
the income of the Endowment  
Fund, balance of sum, accrued in  
1879.....\$16,421 00

On account of \$32,890 due from  
same source in 1880..... 11,445 00

————— \$27,866 00

From students' term bills:

Winter term, 1879-80 ..... \$1,206 00

Spring term, 1880..... 1,151 00

Fall term, 1880 ..... 1,397 00

Miscellaneous items ..... 43 50

————— \$3,797 50

From proceeds of notes received for

sale of Virginia Military lands... \$2,506 29

Interest on such notes ..... 298 91

Sale of Virginia Military lands..... 4,479 88

————— \$7,285 08

From rent of houses:

President Orton ..... \$350 00

Professor Townshend ..... 300 00

Professor Mathew ..... 116 66

————— \$766 66

From miscellaneous sources, to wit:

Professor S. A. Norton, chemical  
materials sold to students..... \$162 47

C. E. Thorne, farmer, for coal sold 51 61

Coal sold to dormitory..... 6 68

————— \$220 76

From the State treasury for appropriations as follows:

To reimburse the University for

expenses of trustees since 1871... \$5,150 90

For trustees' expenses for 1880 ..... 350 00

## ANNUAL REPORT.

For chemical apparatus .....	\$600 00	
For chemical analyses .....	600 00	
	<u>          </u>	\$6,700 90
Total receipts during the year.....		\$46,636 90
		<u>          </u>
Total receipts, including above balance.....		\$51,623 82

## CONTRA, CR.

Nov. 15, 1880. By expenditures as follows (for items see detailed statement).

For support and maintenance of the University, viz.:		
For salaries of faculty, teachers, assistants, other officials and regular employes.....	\$26,461 40	
For expenses of trustees .....	572 61	
For fire-insurance.....	100 00	
For other current expenses .....	1,904 93	
	<u>          </u>	\$29,038 94
For furniture and apparatus not included in depart- ment supplies .....		\$114 64
For library .....		137 83
For farm expenses.....	\$559 25	
For improvements .....	1,641 87	
For repairs.....	1,098 98	
	<u>          </u>	\$3,300 10
For University band.....		25 00
For department supplies.....		1,612 16
For expenses of Virginia Military Lands.....		2,223 65
For amount paid into State treasury.....		12,073 28
		<u>          </u>
Total disbursements for the year .....		\$48,525 60
Balance of cash on hand .....		3,098 22
		<u>          </u>
Total receipts, including cash on hand November 15, 1879.....		\$51,623 82

## STATEMENT II.

## VIRGINIA MILITARY LAND SALES.

The cash receipts into the treasury from the proceeds of the sales of these lands, as reported to November 15, 1879, were.....	\$24,139 37	
Receipts during fiscal year 1880.....	7,285 08	
	<u>          </u>	
Total receipts to November 15, 1880.....		\$31,424 45
Total expenses on this account to November 15, 1879, as per report for last year.....	\$12,066 09	
Expenses in 1880 .....	2,223 65	
	<u>          </u>	
Total expenses to November 15, 1880.....		\$14,289 74
		<u>          </u>
Balance, showing net receipts to date .....		\$17,134 71

Of this amount, the net receipts to November 15, 1879, were paid into the State treasury to the credit of the Endowment Fund of the University, as provided by law .....	\$12,073 28
Leaving the net proceeds for the year just closed, subject to the order of the Board for payment into the State treasury.....	\$5,061 43

## . STATEMENT III.

SHOWING THE AMOUNT OF THE OHIO STATE UNIVERSITY ENDOWMENT FUND, COMPUTED IN ACCORDANCE WITH THE PROVISIONS OF THE ACT PASSED FEBRUARY 10, 1870. (Revised Statutes, Sec. 8446).

Amount of fund as principal, January 1, 1880.....	\$507,913 94
Add interest on same, six months, to July 1, 1880, at 6 per cent. per annum .....	\$15,237 42
Add interest on \$34,500 of Franklin County Agricultural bonds to March 15, 1880.....	\$1,207 50
Add interest on last amount to July 1, 1880.....	21 13
Add amount unpaid by the Treasurer of Franklin county, September 15, 1879.....	140 00
Add interest on same to July 1, 1880 .....	6 65
	<hr/>
	\$1,375 28
Add amount paid June 30, by H. S. Babbitt, treasurer Ohio State University, into State treasury, being net proceeds of sales of Virginia Military Lands to November 15, 1879.....	\$12,073 28
	<hr/>
Total additions, first half year.....	\$28,685 98
	<hr/>
Making .....	\$536,599 92
From which is to be deducted the payments made by the State from the income of the fund since last report, as follows:	
Jan. 27, 1880—\$1,421.00, with interest to July 1, 1880, 5 mos. 3 days	\$34 23
Jan. 29, 1880— 3,000.00                   “                   “                   5 “ 1 “	75 50
Feb. 27, 1880— 3,000.00                   “                   “                   4 “ 2 “	61 00
June 19, 1880— 3,000.00                   “                   “                   11 “	5 50
“ 30, 1880—12,073.28                   “                   “                   ...	.....
	<hr/>
	\$22,494.28
	<hr/>
	\$178 23
	<hr/>
Total deductions first half year .....	\$22,672 51
	<hr/>
Leaving amount of new principal July 1, 1880.....	\$513,927 41
	<hr/>
Amount of principal July 1, 1880.....	\$531,927 41
Add interest on this sum to January 1, 1881 .....	\$15,407 82
Add interest on Franklin county bonds due September 15, 1880, \$34,500, at 7 per cent. per annum.....	1,207 50



Add interest on last amount to January 1, 1881.....	21 13	
		<hr/>
Total additions second half year .....	\$16,686 45	
		<hr/>
Making.....	\$530,563 86	
From which is to be deducted the following payments :		
Oct. 9, 1880—\$2,871.72, with interest to Jan. 1, 1881, 2 mos. 22 days	\$39 25	
Nov. 1, “ — 2,500.00, “ “ 2 “	25 00	
		<hr/>
25,371.72	\$64 25	
		<hr/>
Total deductions second half year .....	\$5,435 97	
		<hr/>
Leaving amount of fund derived from proceeds of sales of land scrip, etc., and accumulations thereto, till January 1, 1881 (less, of course, any sums that may be drawn between November 15, 1880, and January 1, 1881 ) .....	\$525,127 89	
Upon this sum interest at the rate of six per cent. per annum, compounded semi-annually, is payable, under the provisions of sections 8433 and 8446 of the Revised Statutes, to the Ohio State University. Besides this, a deposit made with the Treasurer of State by the Trustees of the Ohio Agricultural and Mechanical College, complying with provisions of an act passed January 20, 1871, of the seven per cent. bonds of Franklin county, amounts to * .....		
	\$34,500 00	
		<hr/>
Making an aggregate fund, held in trust by the State for the University, ( see note A ), of .....	\$559,627 89	
		<hr/>
Interest upon the above sums, computed upon the same terms, for 1881, will amount to.....	\$33,922 67	
		<hr/>
Requisitions were made and warrants were issued upon the State Treasury during the fiscal year 1880, as above shown, to the amount of.....	\$27,866 00	
This sum includes a portion of the interest accrued and subject to draft in 1879, but not drawn until after the close of the fiscal year 1879, amounting to.....	16,421 00	
		<hr/>

\* These bonds are now all past due the latest maturing September 15, 1880—interest has been paid in full, and the County Treasurer, P. W. Corzilius, Esq., informs me that interest will continue to be paid until provision is made for their redemption by the county. After the bonds are paid the proceeds will, under the law, remain in the State Treasury, and constitute a part of the irreducible debt of the State, upon which interest will be payable to the University.

NOTE A. In order that there may be no misunderstanding in regard to the amount of the irreducible fund of the University in the State Treasury, it is proper to state that the undrawn balances of accrued interest to January 1, 1881, as shown above, (\$21,445.00), which the Trustees are authorized to make requisition for before that date, will probably be so drawn, and the principal be reduced to \$538,182.89, but, which sum cannot be diminished by any authority vested in the Board of Trustees.

Making the amount received by the Treasurer of the University upon the appropriation of \$32,890, for interest on the irreducible debt of the State in 1880, the sum of.....	\$11,445 00
And leaving still subject to draft, if required by the University, and if drawn out prior to January 1, 1881, the further sum of.....	21,445 00
	<hr/>
	<u>\$32,890 00</u>

Of the above sum of \$21,445, requisitions have already been issued by the Commissioners of the Sinking Fund for the sum of *five thousand* dollars, which are now in the hands of the Treasurer of the University, leaving the sum of \$16,445.00 to be drawn upon prior to January, 1881.

The act of February 10, 1870 (see section 8446, revised statutes), requires the calculations of interest to be made by semi-annual rests, on the first of January and July of each year, but the fiscal year of the State and of the University ends on the 15th of November, and the accounts are all settled at that date. It has been held by the Attorney-General that the balances of appropriations undrawn on the first of January and July annually, revert to the parent fund, as part of the principal, which can not be diminished except by special legislation.

### APPROPRIATIONS.

The following appropriations and authorized expenditures of the funds of the University have been made by the Board of Trustees for the fiscal year 1880:

Nov. 13, 1879—The income of the Endowment Fund, so-called, for the support and maintenance of the University, viz.: .....	\$32,890 00
Jan. 8, 1880—Students' helps—Chemical Department.....	150 00
“ “ “ Mathematical “ .....	40 00
“ “ Supplies for Physical Department.....	50 00
“ “ “ Chemical “ .....	100 00
“ “ Use of Prof. Mathews' apparatus .....	100 00
“ “ Veterinary model .....	26 25
Feb. 25, “ For work on College grounds.....	400 00
Mar. 23, “ reimbursement of reasonable and necessary expenses of Trustees, appropriation by Legislature.....	5,150 90
Apr. 20, “ For purchase of chemicals.....	600 00
June 19, “ Physiological Laboratory.....	100 00
“ “ Agricultural Department—Model of horse.....	1,000 00
“ “ Mechanical “ .....	300 00
“ “ Chemical “ .....	300 00
“ “ Library .....	500 00
“ “ Students' helps—Department Physics .....	200 00
“ “ “ “ Chemistry.....	200 00
“ “ “ “ Mathematics .....	100 00
“ “ “ “ Latin and Greek.....	300 00
“ “ clerical work, President's office.....	75 00
“ “ “ Mechanical Laboratory.....	25 00

	"	"	salary, Librarian .....	\$125 00
	"	"	advertising.....	200 00
	"	"	College band.....	25 00
	"	"	net proceeds of Virginia Military Lands, to be paid into State treasury.....	12,073 28
	"	"	Trustees' expenses (appropriation) .....	350 00
	"	"	first half of N. E. Lord's salary (past session) .....	600 00
Oct. 14,	"	"	second half " " (present session) .....	600 00
			gas generator .....	150 00

ALBERT ALLEN, *Secretary.*

To H. S. BABBITT, *Treasurer O. S. U.*

## STATEMENT IV.

SHOWING IN DETAIL THE CASH RECEIPTS FROM ALL SOURCES DURING THE YEAR ENDING  
NOVEMBER 15, 1880, BY HENRY S. BABBITT, TREASURER.

Date.	From whom received, and on what account.	Amount.	Total.
1879.			
Nov. 15	Balance of cash on hand .....		\$4,986 92
	C. A. Barton, Agent O. S. U. Virginia Military land sales .....	\$726 79	
	B. M. Reno, Virginia Military land, note .....	2 55	
	L. C. Moon, " " " note, \$59; interest, \$10.66 .....	69 66	
	Jarrett Newman, Virginia Military land, note.....	5 00	
	S. A. Hoffer, " " " int. on notes .....	18 00	
	J. F. Miles, (lot 112), " " " notes and interest .....	112 50	
	D. Bungardner, Virginia Military land, note, 83c; interest, \$5.82.....	6 65	
			941 15
Dec. 18	A. & J. P. Newman, (lot 72), Virginia Military land, note .....	\$10 00	
	Jos. Helterbrand, Virginia Military land, three notes, \$42; interest, \$1.68 .....	43 68	
	F. J. Miller, Virginia Military land, note .....	24 00	
	Alfred McDaniel, " " " interest .....	5 00	
	J. M. King, " " " note, \$10; int., \$1.90 .....	11 90	
	Jas. Parks, Virginia Military land, note, \$30; int., \$3.60 .....	33 60	
	W. Parks, Virginia Military land, note, \$15.78; int., \$2.84 .....	18 62	
	C. A. Barton, Agent, Virginia Military land sales, lot 68 .....	200 00	
	Thos. Mathew, house rent for November.....	16 67	
	Edward Orton, house rent for November and December.....	70 00	
	Edward Orton, coal for dormitory.....	6 68	
			440 15
	20 Jno. Collins, Virginia Military land, note, \$19; int., \$3.60 .....	\$22 60	
	A. Allen, Secretary, term bills.....	38 50	
			61 10
1880.			
Jan. 27	C. A. Barton. Agent, Virginia Military land sales ...	\$300 00	
	Randolph Wilburn, " " " notes \$146.96; interest, \$16.04 .....	163 00	
			463 00
	State Treasury, income of endowment .....		1,421 00
	" " " .....		3,000 00
Feb. 5	Thos. Mathew, house rent for December and January .....	\$33 34	
	C. E. Thorne, coal for College.....	51 61	
	C. A. Barton, Virginia Military land sales .....	200 00	
			284 95
	27 State Treasury, income of endowment .....		3,000 00
	28 Albert Dean, Virginia Military land, note .....	\$30 00	
	C. A. Barton, " " " sales .....	70 00	
	Thos. Mathew, house rent for February.....	16 67	
			116 67
March 9	Edward Orton, house rent for January and February .....	\$70 00	
	C. A. Barton, Virginia Military land sales.....	200 00	

## STATEMENT IV.—Continued.

Date.	From whom received, and on what account.	Amount.	Total.
March 9	J. G. Freeman, Virginia Military land, note .....	25 00	
	A. & J. Newman, " " " note .....	15 00	
			\$310 00
20	Albert Allen, term bills and damages .....	\$1,206 00	1,206 00
23	State Treasury, reimbursement of Trustees' expenses .....		5,150 90
29	C. A. Barton, Agent, Virginia Military land sales ...	225 00	
	" " Capt. Barton's note .....	75 00	
			300 00
April 5	J. F. Miles, Virginia Military land, three notes, \$38.73; interest, \$3.02 .....	\$41 75	
	Jno. Dougherty, Virginia Military land, note, part..	20 00	
			61 75
10	Sam'l Woods, " " " three notes, \$45.33; interest, \$7.67 .....	\$53 00	
	H. W. Russell, Virginia Military land, note, in part, \$3.33 .....	25 00	78 00
	H. W. Russell, Virginia Military land, 5½ years.... interest, \$21.67.....		
14	Johnson Allen, Virginia Military land, first payment	\$88 34	
	W. W. Hoffer, " " " note, in part..	40 00	
			128 34
17	W. & J. Liston, " " " notes, \$87.09; interest, \$32.76.....	\$119 85	119 85
20	Daniel Nichols, Virginia Military land, note, \$50; interest, \$5.72.....	\$55 72	
	C. A. Barton, Virginia Military land sales .....	289 28	
			345 00
28	E. A. Legg, " " " account of note	\$50 00	
	J. W. Overturf, interest on notes of G. F. Newman and E. Simpson.....	12 18	
			62 18
May 12	Wm. Staley, Virginia Military land, note, \$20; int., \$6	\$26 00	
	Margaret McAfee, " " " int. on two notes	5 00	
	N. J. Powell, " " " note, \$30.50; interest, \$8.50 .....	39 00	
	Edward Orton, house rent for March and April.....	70 00	
	Thos. Mathew, " April.....	16 66	
			156 66
18	C. A. Barton, Virginia Military land sales .....	\$59 75	
	J. B. McGrew, account of note.....	3 60	
			63 35
27	Dan'l Hux, Virginia Military land, note, \$20.90; interest, \$4.35.....	\$25 25	
	A. R. Dugans, Virginia Military land, note, \$25; interest, \$1.50.....	26 50	
	Albert Dean, Virginia Military land.....	39 42	
	C. A. Barton, " " " sales .....	110 00	
			201 17
29	G. W. Robinson, " " " notes.....	\$199 50	
	A. J. Powell, " " " note, \$36.16; interest, 9c.....	36 25	
	Thos. Mathew, house rent.....	16 66	
			252 41
June 4	A. Allen, Secretary, term bills, \$1143; trespassing, \$8 .....		1,151 00
18	State Treasury, income of endowment .....		3,000 00
	J. P. Freeman, Virginia Military land note.....	\$24 00	
	A. & J. P. Newman, " " " .....	65 00	
			89 00

## STATEMENT IV.—Continued.

Date.	From whom received, and on what account.	Amount.	Total.
1880.			
June 18	C. A. Barton, Agt., sales Virginia Military land.....	\$788 85	
	same, " " " " bal.		
	to date .....	1,115 37	\$1,904 22
26	State Treasury, chemical analyses.....	\$600 00	
	same, expenses of Trustees.....	350 00	950 00
29	Jacob Louman, Va. Military land, on acc't of note ...	30 00	
	Albert Allen, " " sale lot 75, Adams Co	106 50	
	Prof. S. A. Norton, apparatus, etc., sold.....	162 47	
	President Orton, house-rent, May and June .....	70 00	
	Prof. Townshend, " 1 year.....	300 00	
	Prof. Mathew, " 1 month.....	16 66	685 63
30	State Treasury, income on endowment .....	\$3,000 00	
	same, " " bal. of income		
	to January 1, 1880 .....	3,000 00	
	State Treasury, on account of income accrued since		
	January 1 .....	6,073 28	12,073 28
Aug. 16	W. W. Hoffer, Virginia Military land note.....	30 00	
	S. A. Hoffer, " " " .....	25 00	
	W. S. Hall, " " " .....	32 00	
	Johnson Allen, " " " \$35.34, and		
	interest on 5 notes, \$10.60 .....	45 94	
	Elizabeth Davis, Virginia Military land, int. on note	. 5 22	
	Ezekiel East, " " " .....	7 26	
	Ex-student (anonymous), through Pres't Orton, dues	5 00	150 42
	Bettie Allen, Virginia Military land notes.....	\$27 00	
	same, " " " interest on 5 notes	4 05	31 05
Sept. 17	E. A. Legg, Virginia Military land note.....	\$27 00	
	W. W. Hoffer, " " " .....	16 40	
	S. A. Hoffer, " " " .....	35 45	
	John Liston, " " " .....	32 00	
	J. G. Freeman " " " .....	75 00	
	A. M. King, " " " \$50; interest,		
	\$7.87.....	57 87	
	Thos. O. Brown, Virginia Military land note, \$60;		
	interest, \$7.10.....	67 10	
	A. W. Yankee, Virginia Military land note, \$59.74;		
	interest, \$3.58.....	63 32	374 14
22	J. F. Compton, Virginia Military land note, \$22; in-		
	terest, \$1.36.....		23 36
Oct. 2	W. McCoy, Virginia Military land note, \$48.41; in-		
	terest, \$3.59 .....	\$52 00	
	Henry W. Russell, Virginia Military land, on ac-		
	count of notes .....	15 00	
	M. C. & L. C. Damarin, Virginia Military land		
	note .....	\$64 37	
	M. C. & L. C. Damarin, interest, \$2.57 and \$2.44	5 01	
		69 38	
	M. P. Thompson, Virginia Military land note, \$50;		
	interest, \$6.40.....	56 40	192 78
9	State Treasury, income of endowment.....		2,871 72

STATEMENT IV.—Continued.

Date.	From whom received, and on what account.	Amount.	Total.
1880.			
Oct. 13	Barnes & Satterfield, two Virginia Military notes, for \$92 17 each.....	\$184 34	
	Interest on same.....	11 06	
			\$195 40
Nov. 14	State Treasury, amount of appropriations for analyses		600 00
1	State Treasury, income of endowment.....		2,500 00
5	Isabella Harvey, five notes of \$15 each.....	\$75 00	
	Interest on same.....	6 66	
		\$81 66	
	Hiram Cooper, one Virginia Military land note .....	\$14 90	
	Interest on same.....	10 10	
		25 00	
	J. W. Smith, Virginia Military land note.....	\$20 16	
	Interest on same.....	14 59	
		34 75	
	John P. Freeman, balance on Virginia Military land notes, \$56; interest, \$16.86.....	72 86	
	President Edward Orton, house rent .....	70 00	
			284 27
6	A. Allen, Secretary, fall term bills—		
	Incidental fees, etc .....	\$1,115 00	
	Chemical laboratory fees.....	250 00	
	Physical “ “ .....	7 00	
	Rent of stalls.....	25 00	
			1,397 00
	Total receipts, including balance on hand November 15, 1879 .....		\$51,623 82
	Total disbursements during year (see next statement for details).....		48,525 60
	Balance of cash on hand November 15, 1880.....		\$3,098 22

## STATEMENT V.

A DETAILED ACCOUNT OF DISBURSEMENTS, BY HENRY S. BABBITT, TREASURER, DURING  
THE FISCAL YEAR ENDING NOVEMBER 15, 1880.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1879.				
Nov. 15	1	Stephen Johnston.....	Expenses as trustee.....	\$11 75
	2	T. J. Godfrey.....	" " .....	19 75
	3	S. H. Ellis.....	" " .....	17 15
	4	J. B. Jamison .....	" " .....	20 50
	5	C. A. Barton .....	Salary, \$300; expenses, Va. Mil. lands, \$395.03 .....	695 03
17	6	C. M. Lewis.....	Instructor in Latin.....	37 50
	7	H. L. Wilgus.....	Services in President's room.	25 00
18	8	M. Dillon .....	Salary as engineer.....	35 00
22	9	N. W. Lord .....	Salary for November.....	120 00
	10	Jos. Millikin .....	" " .....	225 00
	11	A. W. McFarland.....	" " .....	225 00
24	12	Edward Orton.....	" " .....	275 00
26	13	J. R. Smith .....	" " .....	150 00
	14	John T. Short.....	" " .....	150 00
27	15	S. A. Norton .....	" " .....	225 00
	16	A. H. Tuttle.....	" " .....	225 00
28	17	Thomas Mathew .....	" " .....	85 00
29	18	Luigi Lomia .....	" " .....	60 00
Dec. 2	19	N. S. Townshend.....	" " .....	225 00
3	20	J. T. Anderson.....	Historical chart.....	10 67
4	21	W. Taylor.....	Cement and oil.....	1 86
	22	M. Dillon .....	Balance November salary...	36 66
5	23	Cott & Hann.....	Printing.....	5 75
6	24	A. H. Tuttle .....	Zool. dep't supplies.....	13 48
16	25	S. W. Robinson .....	Salary for November.....	225 00
18	26	C. M. Lewis.....	Inst. in Latin and Greek....	37 50
	27	H. L. Wilgus.....	" Mathematics.....	25 00
	28	Keffer & Marvin.....	Student assistants.....	75 00
	29	Sioux Glover.....	Assistant Librarian.....	37 50
	30	Edward Orton.....	Paid student assistant in Chemistry, \$50; assistant in office, \$30 .....	80 00
	31	Chauncy B. Baker.....	Assistant in Zoology .....	50 00
20	32	R. W. McFarland.....	Civil Engineering supplies...	5 87
	33	Royce & Pulling.....	Bolts, etc.....	4 65
	34	Alice Williams.. ..	Salary for November.....	55 00
24	35	Edward Orton.....	" December .....	275 00
	36	S. A. Norton .....	" " .....	225 00
	37	Jos. Millikin .....	" " .....	225 00
	38	N. S. Townshend.....	" " .....	225 00
	39	R. W. McFarland.....	" " .....	225 00
	40	A. H. Tuttle.....	" " .....	225 00
	41	L. Lomia.....	" " .....	60 00
	42	N. W. Lord .....	" " .....	120 00
	43	S. W. Robinson.....	" " .....	225 00
	44	J. R. Smith .....	" " .....	150 00
	45	J. T. Short .....	" " .....	150 00
	46	Thomas Mathew .....	" " .....	85 00
	47	Alice Williams.....	" " .....	55 00



## STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1879.				
Dec. 24	48	M. Dillon .....	Salary for December.....	\$83 33
	49	A. D. Rodgers, P.M.....	Postage .....	16 00
	50	J. Greenwood & Sons.....	Bolts, and labor on cresting..	15 03
	51	J. M. & W. Westwater.....	Gas-fixtures .....	6 20
	52	Wassall Fire Clay Co .....	Pipes .....	19 60
27	53	T. J. Hand.....	6 volumes A. J. C. C. Register .....	22 50
	54	S. E. Samuel & Co.....	Laboratory supplies.....	7 95
1880.				
Jan. 8	55	S. Johnston.....	Trustee expenses .....	18 00
	56	J. B. Jamison.....	" " .....	18 25
13	57	R. G. Hanford.....	Trees .....	25 00
	58	Uhlman & Glock .....	Drawing materials.....	4 65
	59	Martin Krauss.....	Days' work.....	28 88
	60	Wassall Fire Clay Co.....	Bricks and clay.....	9 34
	61	W. Fagg .....	Repairing pump.....	7 50
	62	Dennis Neal ..	34½ days' work .....	43 12
	63	Matthesson & Hegeler.....	Zinc plates .....	3 32
	64	C. E. Thorne.....	Bill of work on college grounds .....	105 65
	65	Gardner Bros.....	Tile, etc.....	24 50
	66	H. W. Derby & Co.....	Books.....	3 00
	67	E. B. Benjamin.....	Bone ash.....	6 50
16	68	John Mathews.....	Gas generator .....	150 00
	69	Thomas Mathew.....	Drawing apparatus .....	100 00
	70	A. D. Rodgers, P.M.....	Postage on catalogues.....	20 00
28	71	Edward Orton.....	Salary for January.....	275 00
	72	S. A. Norton.....	" " .....	225 00
	73	Jos. Millikin .....	" " .....	225 00
	74	N. S. Townshend.....	" " .....	225 00
	75	P. Hayden & Son.....	Grates and lintels.....	35 15
	76	S. H. Ellis.....	Trustee's expenses.....	32 15
	77	M. Dillon .....	Account January salary.....	42 76
	78	same .....	Balance on January salary...	40 57
	79	R. W. McFarland .....	Salary for January.....	225 00
	80	A. H. Tuttle.....	" " .....	225 00
	81	Luigi Lomia.....	" " .....	60 00
	82	S. W. Robinson.....	" " .....	225 00
	83	J. R. Smith.....	" " .....	150 00
	84	N. W. Lord.....	" " .....	120 00
	85	J. T. Short .....	" " .....	150 00
	86	Thomas Mathew.....	" " .....	85 00
	87	A. D. Rodgers, P.M.....	Postage Sec'y .....	8 18
	88	Alice Williams.....	Salary for January.....	55 00
	89	Albert Allen .....	Salary to Secretary, on acc ..	150 00
31	90	A. D. Rodgers, P.M.....	Postage .....	24 72
Feb. 1	91	N. S. Townshend.....	Model of horse's foot.....	26 85
5	92	S. Johnston .....	Trustee expenses .....	15 75
	93	T. J. Godfrey .....	" .....	32 85
	94	J. B. Jamison.....	" .....	17 80
	95	A. T. Thrall.....	Printing .....	2 50
	96	J. A. Rea, agent .....	Insurance on buildings, etc..	75 00
6	97	A. D. Rodgers, P.M.....	Postage on reports.....	5 02
10	98	Wm. G. Dunn & Co.....	2 mats .....	4 30
11	99	G. M. Maris & Co.....	Hardware .....	10 60
	100	Wm. Taylor.....	Brooms, etc.....	6 60
	101	E. B. Armstrong .....	Copper tank, etc.....	56 50

## STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1890.				
Feb. 11	102	S. A. Norton .....	Chemicals .....	\$10 97
	103	Nevins & Myers.....	Programmes.....	21 90
	104	Central Ohio Paper House	Envelopes .....	2 80
	105	Strobridge & Co.....	Diplomas.....	8 00
	106	Steinbarger & Hensel.....	Alcohol .....	4 60
	107	W. H. Leete .....	Legal services .....	28 25
12	108	S. Johnston .....	Trustee expenses .....	7 50
26	109	same .....	" .....	8 75
	110	J. B. Jamison .....	" .....	12 50
	111	T. J. Godfrey .....	" .....	18 36
	112	S. H. Ellis .....	" .....	12 50
	113	M. Dillon .....	Account salary as Janitor ..	40 00
	114	Edward Orton .....	Salary for February.....	275 00
	115	Prof. Norton .....	" .....	225 00
	116	Jos. Millikin .....	" .....	225 00
	117	N. S. Townshend .....	" .....	225 00
	118	R. W. McFarland .....	" .....	225 00
	119	A. H. Tuttle .....	" .....	225 00
	120	Luigi Lomia.....	" .....	60 00
	121	S. W. Robinson .....	" .....	225 00
	122	J. R. Smith .....	" .....	150 00
	123	N. W. Lord .....	" .....	120 00
	124	John T. Short .....	" .....	150 00
	125	Thomas Matthew.....	" .....	85 00
	126	Alice Williams.....	" .....	55 00
March 6	127	Edward Orton .....	Books .....	22 43
28	128	C. W. Lewis .....	Instructor 2d term.....	37 50
	129	H. L. Wilgus.....	" 1st term .....	22 50
	130	Clark Fahey .....	Repair work.....	54 60
	131	M. Dillon .....	Balance salary February ..	48 33
4	132	Isaiah Pillars .....	Legal services, V. M. lands..	300 00
7	133	Wm. Taylor.....	Brooms .....	6 25
6	134	T. S. Vaughn.....	Freights, etc., labor equip's..	12 89
	135	same .....	Freights and Met. Dept.....	2 99
8	136	J. K. Billings.....	Legal fees Va. Mil. lands..	50 00
	137	Edward Orton .....	Freights, etc.....	51 72
	138	J. L. Gilt .....	Lumber (Mech. Laboratory)	14 88
	139	G. W. Gleason .....	Scientific journals .....	22 60
	140	Steinbarger & Hensel.....	Alcohol .....	4 90
	141	A. D. Rodgers, P.M.....	Postage .....	11 (4)
9	142	Albert Allen .....	Salary as Secretary .....	180 00
10	143	M. Dillon .....	Account salary for March....	19 09
13	144	Miss Sioux Glover.....	Asst. Librarian salary.....	37 50
	145	Keffer & Marvin .....	Services as teachers. ....	62 50
	146	G. D. Makepeace.. ..	Leader of band .....	15 00
	147	C. B. Baker .....	Asst. in Zoology.. ..	37 50
	148	David O'Brine .....	" chemical laboratory .....	50 00
	149	H. L. Wilgus.....	" Mathematics .....	22 50
	150	C. M. Lewis.....	" Languages .....	37 50
	151	Edward Hyatt.....	Ass't President's room .....	30 00
20	152	R. W. McFarland.....	Salary .....	25 00
23	153	J. Greenwood & Sons.....	Acc't of engine .....	220 00
	154	" .....	Bal. on .....	180 00
24	155	Jos. Millikin.....	Salary for March .....	225 00
	156	J. T. Short .....	" .....	150 00
	157	C. E. Thorne.....	Farm improvements.....	400 00
26	158	Edward Orton.....	Salary for March .....	275 00

## STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1880.				
March 26	159	S. A. Norton .....	Salary for March .....	\$225 00
	160	N. S. Townshend .....	" " .....	<del>225 00</del>
	161	R. W. McFarland .....	" " .....	225 00
	162	A. H. Tuttle .....	" " .....	<del>225 00</del>
	163	Luigi Lomia .....	" " .....	60 00
	164	S. W. Robinson .....	" " .....	225 00
	165	J. R. Smith .....	" " .....	150 00
	166	N. W. Lord .....	" " .....	120 00
	167	Thos. Mathew .....	" " .....	85 00
	169	M. Dillon .....	Bal. salary for March .....	64 24
	170	J. B. Jamison .....	Expense as Trustee .....	17 75
	168	Alice Williams .....	Salary for March .....	55 00
29	171	A. D. Rogers, P. M. ....	Postage for Secretary .....	6 00
	172	Zelotes Wood Agt. ....	Insurance .....	25 00
April 3	178	M. Dillon .....	Acc't of salary for April .....	21 66
12	174	J. Greenwood & Sons .....	Supplies for Mech. Dep't. ....	88 75
14	175	Lyonsdale Coal Co. ....	206½ tons coal .....	348 41
	176	M. S. Rocky .....	Repairing pump .....	12 00
	177	W. Halley .....	Supplies Chem. Dep't, \$5.27; sundries, \$17.73 .....	23 00
15	178	S. A. Norton .....	Supplies Chem. Dep't. ....	54 89
	179	G. M. Maria & Co. ....	Glass .....	5 15
	180	B. D. Potts .....	Vise-jaws, etc. ....	9 10
	181	R. B. Adams .....	Lumber for Mech. Lab. ....	15 60
	182	S. A. Norton .....	Chem. Dep't supplies .....	3 15
	183	Siebert & Lilley .....	Visitor's register, etc. ....	11 75
	184	E. B. Armstrong .....	Chem. Dep't supplies .....	18 95
16	185	A. Allen .....	Salary as Secretary .....	70 00
17	186	Thos. Mathew .....	Drawing Dep't supplies .....	61 86
20	187	T. J. Godfrey .....	Expenses as Trustee .....	16 80
	188	J. B. Jamison .....	" " .....	12 00
	189	S. J. Johnston .....	" " .....	10 00
29	190	Edward Orton .....	Salary for April .....	275 00
	191	S. A. Norton .....	" " .....	<del>225 00</del>
	192	Jos. Millikin .....	" " .....	2 5 00
	193	N. S. Townshend .....	" " .....	225 00
	194	R. W. McFarland .....	" " .....	225 00
	195	A. H. Tuttle .....	" " .....	225 00
	196	Luigi Lomia .....	" " .....	<del>60 00</del>
	197	S. W. Robinson .....	" " .....	225 00
	198	J. R. Smith .....	" " .....	150 00
	199	J. T. Short .....	" " .....	150 00
	200	Thos. Mathew .....	" " .....	85 00
	202	M. Dillon .....	Bal. salary for April .....	61 67
	203	N. W. Lord .....	Salary for April .....	120 00
	201	A. H. Tuttle .....	Zoological Dep't. supplies .....	46 05
	204	Alice Williams .....	Salary for April .....	55 00
	205	J. & H. Berge .....	Crucibles .....	7 75
May 6	207	S. Johnston .....	Trustee expenses .....	9 00
8	208	M. Flynn .....	Lawn-keeper .....	20 00
	206	S. W. Robinson .....	Department supplies .....	14 67
12	209	Elliott, Jones & Co. ....	Letter-press .....	12 71
	210	G. M. Maria & Co. ....	Hardware .....	38 74
	211	B. D. Potts .....	Repairs Mech Laboratory .....	4 65
	212	G. W. Gleason .....	Books for Laboratory .....	30 52
	213	Wassall Fire-Clay Co. ....	Drain-pipes .....	7 50
	214	F. Aerniger .....	Zoology case .....	22 50

## OHIO STATE UNIVERSITY.

## STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1880.				
May 12	215	Edward Orton.....	Sundry expenses .....	\$60 00
13	216	N. W. Lord .....	Paid for Mining Department supplies .....	60 30
14	217	C. E. Thorne.....	Paid for work on lawn, etc...	69 66
	218	S. W. Robinson .....	Department supplies.....	41 33
	219	Andrew Schwarz.....	Door-springs .....	2 50
	220	Albert Allen.....	Salary as Secretary, etc .....	80 00
	221	Lyonsdale Coal Co .....	Coal .....	26 25
	222	Whitall, Faltein & Co.....	Jars for Zoological Dep't .....	55 49
	223	S. W. Robinson .....	Ex. ch'd on Dep't supplies..	13 46
	224	S. E. Samuel & Co.....	Potash .....	1 20
	225	Columbus Telephone Co...	Use of telephone 1 year .....	50 00
	226	Henry S. Babbitt.....	Sal. 6 mos., \$200; exp. \$8.25..	208 25
19	227	Columbus Transfer Co.....	Trans. charges on supplies...	5 70
28	228	N. W. Lord .....	Salary for May .....	120 00
	229	Edward Orton .....	" .....	275 00
	230	S. A. Norton .....	" .....	225 00
	231	Joseph Millikin .....	" .....	225 00
	232	N. S. Townshend.....	" .....	225 00
	233	R. W. McFarland.....	" .....	225 00
	234	A. H. Tuttle .....	" .....	225 00
	235	Luigi Lomia .....	" .....	60 00
	236	S. W. Robinson .....	" .....	225 00
	237	Thos. Mathew.....	" .....	85 00
	238	Alice Williams.....	" .....	55 00
	239	J. R. Smith .....	" .....	150 00
	240	J. T. Short.....	" .....	150 00
	241	M. Dillon .....	" .....	83 33
	242	J. F. Linton.....	Legal Record.....	2 00
	243	J. V. Flynn .....	Lawn-keeper, 1 month.....	35 00
29	244	C. M. Lewis.....	Instruction one-half term...	37 50
June 1	245	Keffer & Marvin.....	Assistants in Physics.....	62 50
	246	Miss S. Glover .....	Assistant Librarian .....	37 50
	247	C. B. Baker .....	" Zoology .....	37 50
	248	C. M. Lewis .....	Sal. salary as instructor .....	37 50
	249	Edward Hyatt .....	Salary ass't teacher, etc.....	35 00
	250	David O'Brine .....	" chemist.....	50 00
2	251	Tim. O'Leahy .....	Repairs to college buildings	67 00
	252	A. Allen .....	Salary as Secretary.....	75 00
4	253	A. Ellis.....	Trustee expenses .....	7 20
8	254	Columbus Transfer Co.....	Freight, etc .....	2 52
4	255	W. Halley .....	Plumbing .....	39 35
9	256	A. Allen.....	Ex. (carriage and express)...	3 15
	257	C. H. Williams.....	Printing 200 postal-cards....	2 50
10	258	A. D. Rodgers, P. M.....	Postage for President .....	8 00
	259	Royce & Pulling.....	Steam fixtures.....	17 06
	260	J. M. & W. Westwater.....	Gas-fixtures, "Alcyone.".....	88 00
	261	Siebert and Lilley .....	Blank-books.....	10 50
	262	Christian Jensen .....	Painting society room.....	10 00
	263	N. S. Townshend.....	Repairs to house.....	24 00
	264	Columbus Cabinet Co .....	Library table.....	12 00
18	267	C. E. Thorne..	Farm expenses .....	150 00
17	268	S. Johnston .....	Expenses as Trustee .....	19 50
	265	S. H. Ellis.....	" .....	11 10
	266	C. A. Barton, Agt.....	Sal. and exps. Va. Mil. Dist..	1,115 37
19	269	Edward Orton .....	Salary for June.....	275 00
	270	S. A. Norton .....	" .....	225 00

## STATEMENT V—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1880.				
June 19	271	Joseph Millikin .....	Salary for June.....	\$225 00
	272	N. S. Townshend.....	" " .....	225 00
	273	R. W. McFarland.....	" " .....	225 00
	274	A. H. Tuttle.....	" " .....	225 00
	275	Luigi Lomia.....	" " .....	60 00
	278	N. W. Lord .....	" " .....	120 00
	277	J. R. Smith .....	" " .....	150 00
	276	S. W. Robinson .....	" " .....	225 00
	279	J. T. Short .....	" " .....	150 00
	280	Thomas Mathew.....	" " .....	85 00
	281	Alice Williams.....	" " .....	55 00
	282	M. Dillon .....	" " .....	83 33
	283	C. J. Wilfing.....	8½ days' repairs.....	12 75
	284	A. Ellis .....	Trustee expenses .....	18 00
	285	R. W. McFarland.....	Sup't. of grounds, 1 year ....	25 00
	286	same .....	Supplies for same.....	9 70
24	287	T. J. Godfrey .....	Trustee expenses.....	20 50
	288	J. B. Jamison .....	" .....	24 50
	289	S. Johnston .....	" .....	12 75
	290	S. A. Norton .....	Sundries for chem. dep't ....	15 49
26	291	Edward Orton.....	Expenditures by President..	35 00
29	292	A. Allen.....	Special services.....	300 00
	293	H. S. Babbitt, treasurer ....	Net proceeds of Va. Military Land sales to Nov. 15, 1879	12,073 28
July 1	294	J. A. Flynn .....	Repairing mower.....	36 13
2	295	G. M. Maris .....	Twine .....	75
	296	Edward Orton.....	Bal. of expenses .....	41 70
	297	Columbus Gas Fitting Co..	Repairs and fixtures .....	4 00
	298	Strobridge & Co.....	Diplomas .....	10 00
	299	Elliott Jones & Co.....	Envelopes .....	2 15
	300	Siebert & Lilley .....	Pencil pads .....	4 98
	301	Osborn & Co.....	Sewing old carpet.....	2 00
	302	Cott & Hann.....	Printing circulars.....	32 25
	303	N. High Street Chariot Co..	For Legislature.....	18 00
	304	Thomas Mathew .....	Dep't. supplies .....	5 67
	305	Patton Mf'g. Co.....	Sand.....	10 00
	306	Wm. Fish & Sons .....	Stone steps and settings.....	7 00
	307	J. K. McDonald .....	Carriage hire.....	8 00
	308	John A. Billings.....	Att'y. services Va. Mil. Land	35 00
	309	Leo. Weltz.....	Fruit and shade trees .....	100 00
24	310	T. J. Godfrey .....	Expenses as Trustee.....	13 55
	311	J. B. Jamison .....	" " .....	13 00
	312	S. H. Ellis.....	" " .....	11 10
29	313	M. Dillon .....	Janitor's salary.....	83 34
30	314	A. Allen.....	Salary as Secretary .....	75 00
August 3	315	A. Ellis.....	Expenses as Trustee .....	13 00
	316	J. R. McDonald .....	Plastering.....	26 00
	317	Columbus Transfer Co.....	Freight .....	4 48
	318	Dennis O'Neil.....	— days' work.....	21 00
	319	Halm, Bellows & Butler....	Desk, mech'l. lab'y' .....	27 00
	320	W. H. Ferguson.....	Sash and lumber .....	28 00
	321	Kilbourne, Jones & Co ....	Hardware for desks.....	24 44
	322	Averill Paint Co.....	Paints, etc .....	15 20
	323	Stitt, Price & Co.....	Lime .....	6 00
	324	Cott & Hann.....	Circulars.....	22 00
	325	Thomas Stephens .....	Plastering .....	3 37
	326	P. Hayden & Son.....	Castings .....	4 69

## STATEMENT V—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1880.				
August 7	327	A. D. Rodgers, P.M.	Postage for Pres. and Sec'y.	\$20 00
11	328	S. Johnston	(Postage) expenses Trustee.	9 00
18	329	M. Dillon	Account of salary	45 00
27	330	A. Allen	Salary as Secretary	70 00
28	331	A. Ellis	Expenses as Trustee	18 00
	332	Roofing Slate Paint Co.	Painting roof	60 48
31	333	L. S. Thompson	Services Fine Art Dep't.	15 00
Sept. 2	334	S. H. Ellis	Expenses as Trustee	14 00
	335	T. J. Godfrey	" "	18 80
	336	J. B. Jamison	" "	14 50
4	337	J. A. Flynn	Painting at dormitory	18 55
	338	S. Johnston	Expenses, Prof. Thompson	29 75
	339	Kilbourne, Jones & Co.	Hardware	8 16
	340	C. J. Welting	Work on steam boxes	4 35
	341	Ned. Hughes	5 days' work	12 50
	342	Averill Paint Co.	Alabastine	7 70
	343	Enrich & Pinger	Desk irons	21 12
	344	M. Dillon	Balance August salary	38 83
22	345	Luigi Louia	Salary for September	60 00
	346	A. H. Tuttle	" "	225 00
	347	J. T. Short	" "	160 00
	348	Joseph Milliken	" "	225 00
	349	T. King	Refinishing rooms at dormitory	36 00
	350	N. W. Lord	Salary for September	130 00
	351	Edward Orton	" "	275 00
	352	S. A. Norton	" "	225 00
	353	N. S. Townshend	" "	225 00
	354	R. W. McFarland	" "	225 00
	355	S. W. Robinson	" "	225 00
	356	J. R. Smith	" "	160 00
	357	W. A. Mason, Jr.	" "	100 00
	358	Alice Williams	" "	65 00
	359	M. Dillon tutor	" "	83 33
24	360	Geo. E. Waring, Secretary	Ent's. in A. J. C. C. Register	9 25
27	361	Stephen Johnston	Trustees expenses	6 00
30	362	A. D. Rodgers, P.M.	Postage for President	5 00
Oct. 5	363	Dennis Neil, laborer	— days' work.	21 00
	364	Aston, Mill & Co.	Three stoves	24 83
	365	Wm. Halley	Plumbing	72 65
	366	Martin Kelley	Hauling dirt	25 70
	367	A. Allen	Freights paid	1 50
	368	Columbus Cabinet Co.	3 wardrobes	38 00
	369	Halm, Bellows & Butler	Stools	12 00
	370	W. A. Hershiser	Lumber	22 50
	371	Wassall Fire Clay Co.	Brick and clay	4 57
	372	Clark & Fahey	Work on stables	159 37
	373	N. E. Lovejoy & Son	Lumber for stables	365 51
	374	Ayres, Mithoff, Dann & Co.	Locust posts	4 60
	375	Scioto Boiler Works	Repairs	8 30
	376	Kaiser & Bro.	Repairing roof	173 78
	377	Elhott Jones & Co.	Inks	1 20
	378	Daily Times	Advertising	3 50
	379	Myers & Brickell	"	3 50
	380	Condy, Francisco & Co.	"	2 25
	381	Kilbourne, Jones & Co.	Nails	1 86
7		O. S. U.		

## STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1880.				
Oct. 5.	382	D. Van Nostrand.....	Books.....	\$18 50
	383	J. K. Ebright.....	Carpenter work .....	18 25
	384	W. W. Scott.....	Work on dormitory.....	15 00
	385	Abbott, Montgomery & Stoner .....	Hardware .....	54 10
	386	Royce & Pulling.....	Repairing pump.....	34 65
	387	Columbus Transfer Co.....	Freight on chemicals .....	71 03
	388	Prof. Luigi Lomia .....	For the "band" .....	25 00
8	389	Edwin Alden .....	Advertising .....	199 00
9	390	Sidney A. Norton.....	Chemical apparatus.....	685 77
	391	Prof. N. S. Townshend.....	Traveling expenses .....	50 00
	382	M. Dillon .....	On account of salary .....	18 00
	393	Albert Allen .....	On salary as Secretary.....	75 00
28	394	M. Dillon .....	Balance of salary for Oct ....	65 33
	395	Edward Orton .....	Salary for October .....	275 00
	396	Sidney S. Norton .....	" .....	225 00
	397	Jos. Milliki.....	" .....	225 00
	398	N. S. Townshend.....	" .....	225 00
	399	R. W. McFarland.....	" .....	225 00
	400	Albert H. Tuttle .....	" .....	225 00
	401	Luigi Lomia .....	" .....	60 00
	402	S. W. Robinson .....	" .....	225 00
	403	J. R. Smith .....	" .....	160 00
	404	N. W. Lord .....	" .....	130 00
	405	Jno. T. Short.....	" .....	160 00
	406	Wm. A. Mason, Jr.....	" .....	100 00
	407	Alice Williams .....	" .....	65 00
29	408	H. L. Wilgus.....	Student's help, mathematics	25 00
30	409	Jerry Bresnahan .....	Lawn-keeper one month.....	36 00
Nov. 1	410	David O'Brine .....	Ass't in chemical dep't .....	25 00
	411	Miss S. Glover .....	Salary as Librarian.....	25 00
	412	Henry Hyatt.....	President's help.....	25 00
	413	C. M. Lewis.....	Ass't in Latin and Greek .....	25 00
3	414	Wm. Halley .....	Plumbing .....	17 40
	415	John Shea .....	Soap, oil, etc .....	27 51
	416	Cott & Hann.....	Paper.....	3 00
	417	W. A. Hershiser.....	Lumber.....	18 75
	418	Abbott, Montgomery & Stoner .....	Steam hose, etc.....	22 74
	419	Prouty & Hunt.....	Paint .....	32 35
	420	J. K. Flinn.....	Painting and glazing.....	22 14
	421	Scioto Boiler Works .....	Castings .....	34 66
	422	Storrs & Harrison.....	Lawn trees.....	10 00
	423	L. Westfall.....	Repairing stoves.....	1 25
	424	Aston & Huff .....	Castings .....	3 16
	425	A. H. Tuttle .....	Department supplies.....	38 41
	426	Wassall Fire-Clay Co.....	Sewer pipes.....	54 00
	427	Asa Gray .....	Flora Braziliensis.....	5 61
	429	Seibert & Lilley.....	Tuition term-book.....	9 75
	429	Wm. Taylor.....	Buckets .....	1 80
	430	W. A. Mason, Jr.....	Department supplies.....	88 45
	431	Columbus Transfer Co.....	Freight .....	7 05
	432	Frederick Keiffer .....	Ass't in physical laboratory	0 00
5	433	Lyonsdale Coal Co .....	Coal .....	271 71

STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1880.				
Nov. 12.	434	C. E. Thorne.....	Work on lawn.....	\$88 60
	435	Albert Allen.....	Salary as Secretary .....	140 00
	436	Henry S. Babbitt.....	6 mos. salary, \$200 ; postage, \$4 .....	204 00
		Total disbursements ...		\$48,525 60

Total disbursements ..... \$48,525 60  
Balance of cash on hand November 15, 1880..... 3,098 22

Total receipts, including balance on hand November 15, 1879, as  
per Statement No. IV..... \$51,623 82

HENRY S. BABBITT,  
*Treasurer Ohio State University.*

REPORT OF THE FINANCE COMMITTEE.

COLUMBUS, OHIO, November 18, 1880.

*To the Board of Trustees of the Ohio State University :*

We, your Committee on Finance, having this day examined the accounts and vouchers of the Treasurer, and compared them with the records in the possession of the Secretary, do hereby certify that the report of said Treasurer is correct, and that the statements therein contained, truthfully exhibit the condition of the finances of the University for the fiscal year ending November 15, 1880.

Respectfully submitted,

ALSTON ELLIS,  
T. EWING MILLER,  
T. J. GODFREY,  
*Finance Committee Ohio State University.*



# FARM DEPARTMENT.

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## REPORT OF FARM COMMITTEE.

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HON. STEPHEN JOHNSTON, *President Board of Trustees, Ohio State University*:

SIR: Your Farm Committee offer the following report:

At the beginning of the year there was an unexpended balance in the State treasury of the appropriation made by the Legislature during the session of 1878-79, for farm improvements and stock, amounting to \$604.70. During the session of 1879-80, a second appropriation, to the amount of \$1,500, was made for the same objects, which was placed at our disposal, as the first one had been, making a total sum of \$2,104.70, unexpended at the beginning of the year.

It has been deemed best to use the principal portion of these sums in the completion of the system of improvements commenced last year, and in similar work, designed to place the farm in condition for the most economical management. A detailed statement of the different objects for which these expenditures have been made, with the cost of each, will be found in the report of the Farm Manager, C. E. Thorne, which is herewith submitted. We would briefly call your attention to a few of the most important items:

1. The growth of the dairying business of the farm during the year 1879, and the increase of stock through the purchase of the herd of Jerseys, made it necessary to provide more stabling. To this end, the basement of the large barn was remodeled, and given entirely to the stabling of cattle.

2. To provide for the teams and for the farming implements, which had previously been housed in the large barn, the old barn which stood on the north side of the farm was torn down, and rebuilt near the main barn, with more than double its former capacity.

3. It was discovered during the winter, that some portions of the levees built for the purpose of protecting the farm from the river were not sufficiently strong, while it was also seen that the influx of back water, which had not been provided against, was likely to cause considerable inconvenience. The weaker places in the levees were, therefore, strengthened, and the system continued to and across the mouth of the "cut-off;" the whole, except the portion on the north line of the farm, being built wide enough for a wagon road, thus giving access to portions of the farm which have heretofore been inaccessible during high water.

It is difficult to estimate the value to the farm of this "river improvement," as a whole. It has cost nearly three thousand dollars, but, in addition to increasing the actual area of the farm by twelve acres of the best land, it has increased its productive acreage by at least twice as many more, through the protection of lands which were scoured by the river at every flood, upon which it was impossible to maintain a

fence of any description, and where the crops grown upon most of the few acres that were susceptible of cultivation, were liable to be swept away at any time.

4. In connection with the river improvement, it was decided to open the street located on the north line of the farm, and known as "Woodruff Avenue;" it being seen that this step would soon become a necessity to the public, while the filling required to make a road-way here will materially strengthen our barrier against the floodwaters of the river.

5. The excessive drouths of 1879, caused the loss of a considerable portion of our orchard stock, just planted. This has been replaced, and the small-fruit department extended, so that it is expected that the orchard will, henceforth, be a constant and increasing source of revenue, besides affording employment to students, and a means of practical instruction in Horticulture.

For the construction of these and other improvements, we have drawn upon the above-mentioned appropriations to the amount of \$1,104.70, showing a balance of \$1,000 in the State treasury, \$650 of which is now due for improvements, which amount, when paid, will leave \$350 subject to draft.

The Committee have now under consideration plans and purposes relating to the most judicious management of the farm during the coming year, which are not yet matured, but will be presented at the January meeting of the Board. The accounts of the Farm Manager have been compared with the vouchers, and found to be correct.

JAMES B. JAMISON,

*Chairman of Farm Committee.*

## REPORT OF FARM MANAGER.

HON. JAMES B. JAMISON, *Chairman Farm Committee Ohio State University:*

DEAR SIR: I respectfully submit the following report of the operations of the Farm Department, for the year ending October 31, 1880:

### FARM IMPROVEMENTS.

The series of improvements, begun last year under direction of your committee, has been carried nearly to completion. This work has interfered temporarily with the most economical management of the farm, but its completion will add very largely to its general appearance and productive capacity in the future.

These improvements have cost—

In material .....	\$1,429 16
In labor .....	1,441 77

Total .....	\$2,870 93
-------------	------------

Of this amount you have furnished, from the "Farm Improvement and Stock" appropriations of the Legislature, \$1,754.70, and the remaining \$1,116.23 have been paid from a portion of the surplus earnings of the farm.

The above total cost is divided among the following items:

### STATEMENT "A."

Itemized cost of Farm Improvements.	Value of labor.	Cost of material.	Total cost.
1. Re-fitting large barn for cattle.....	\$23 60	\$29 40	\$53 00
2. Moving and re-building horse-barn.....	320 95	594 71	915 66
3. Protecting the farm from the river .....	460 50	42 60	503 10
4. Opening and fencing Woodruff avenue .....	70 40	70 50	140 90
5. Completion of orchard-planting .....	105 55	113 25	218 80
6. Enclosing and watering bull-pens .....	48 25	169 33	217 58
7. Fencing .....	105 80	219 15	324 95
8. Making farm roads .....	37 90	.....	37 90
9. Improvement of High street sidewalk .....	51 90	32 84	84 74
10. Draining.....	30 87	20 00	50 87
11. Clearing woodland.....	50 50	.....	50 50
12. Paving piggery.....	25 22	32 75	57 97
13. Paving barn-yard .....	18 10	.....	18 10
14. Minor improvements.....	92 23	104 63	196 86
Total .....	\$1,441 77	\$1,429 13	\$2,870 93

The minor improvements referred to consisted in straightening and diking the water-course that crosses the farm from east to west, and which frequently overflows on account of the immense volume of water thrown into it from High street during heavy rains; in filling the old channel of this stream, abandoned a few years ago on account of the straightening of its lower end; in digging stumps, clearing the fields of stones and other work calculated to permanently improve the productiveness of the farm, and therefore not properly chargeable to current expense.

#### FARM CROPS, AND RECEIPTS AND EXPENDITURES.

The yield of all the crops of the farm, except grass, has been fair; the latter was injured by drouth in the Spring. Our domestic animals have not suffered seriously from any disease; and, although prices have been low, the season may be regarded as having been of more than average favorableness to farming operations.

The acreage and total yield and value of the various crops grown during the season, are given in statement "B," which is an epitome of all the transactions of the department during the year. The first and last columns are respectively the inventories of plants on hand at the beginning and at the end of the year; the second column shows the entire expenditures, and the fifth column the total sales of the year; the third column gives the total production of the farm, and the fourth column the total consumption of farm produce, labor and expense, in the production of the results shown in the third, fifth and sixth columns, including the depreciation in value of live-stock and implements through disease or wear.

STATEMENT "B".

SHOWING THE PLANT ON HAND AT THE BEGINNING AND END OF THE YEAR, WITH THE PURCHASES, SALES, PRODUCTION AND CONSUMPTION OF THE INTERIM.

Item.	On hand Nov. 1, 1879.		Bought.		Produced or increased in value.		Consumed, died, or decreased in value.		Sold.		On hand Oct. 31, 1880.	
	Number or amount.	Value.	Number or amount.	Value.	Acres.	Number or amount.	Value.	Number or amount.	Value.	Number or amount.	Value.	Number or amount.
Horses .....	8	\$725 00	1	\$80 00		1	\$80 00					10
Hogs .....	72	329 00				28	373 60	2			\$329 10	49
Cattle .....	52	2,478 00	11	400 00		11	532 26				943 76	47
Implements .....	270	1,820 70	114	230 87				40				348
Corn .....	2100 bu.	775 00	297 bu.	141 73	42	2560 bu.	893 00	2009½ bu.				2000 bu.
Wheat .....			208¾ "	325 14	55	1376¼ "	1,306 01	1530½ "				1 77½ bu.
Oats .....	150 bu.	45 00			5½	234 "	70 20	307½ bu.				37
Rye .....	60 "	36 00			2	36 "	34 88					2 21¼ "
Potatoes .....	100 "	60 00			2½	200 "	100 00	4 48 bu.				40
Beets .....	320 "	25 60	18 bu.	14 75	4	2000 "	150 00	320 "				2000 "
Hay .....	25 tons.	250 00	11¼ tons.	85 00	30	50 tons.	500 00	32 tons.				52 tons.
Corn fodder .....	1110 shks.	166 50	156 shks.	23 40		950 shks.	190 00	1266 shks.				950 shks.
Straw .....	30 tons.	90 00	2 tons.	5 00		9¼ tons	206 57	9¼ tons				50 tons.
Milk .....						60 tons.	1800 64					
Sorghum .....					3½	32161 qts.	129 70					
Garden produce .....					3	287 gals.	130 09					
Turnips .....	200 bu.	18 00			1½	100 bu.	10 00	255 bu.				
Pumpkins .....	8 tons.	16 00			1	20 tons.	50 00	16 tons.				
Wood .....	10 cords.	13 50				67 cords.	114 44	5 cords.				
Feed .....							187 02					
Miscellaneous produce .....		13 50			11		241 06					
Expense .....							111 93					
Crop of next year .....		623 16					750 10					
Labor and superintendence .....							4,490 10					
Experimentation .....							65 84					
Permanent improvements .....							1,429 16					
Total .....		\$7,504 96		\$8,380 06	160		\$7,281 89		\$5,848 84		\$6,230 94	

1 Seed of the crop of 1881.  
2 Five bushels of this item, value \$3.30, used as seed.  
3 Part of this item represents increase of value over inventory.  
4 Part of this item represents decrease of value, the remainder is seed used.  
5 Cost of grass seeds, charged to crops of 1881.  
6 Value of labor of farm teams, included in "labor sold", in "improvements", and "experimentation."  
7 Expended on crops of 1881. The total amount of this expenditure is as follows:  
77½ bushel seed wheat..... \$85 62  
5 " seed rye..... 3 30  
8 " grass seeds..... 9 00  
Labor of manuring and sowing ..... 295 75  
Total ..... \$83 67  
The prospective value of the clover crop—60 acres

—is not included in this item, as the fall pasturage and mowing has already more than repaid the cost of sowing.  
\* Material and labor.

It will be seen from the foregoing statement that the cash receipts during the year have been \$6,230.94; if we deduct from this sum the expenditures for live stock, seeds, feed and miscellaneous produce and for labor re-sold, we shall have \$4,569.02 as representing the sales of productions of the farm during the year. This sum was realized from the produce of 225 acres of land, there having been 65 acres in pasturage in addition to the 160 acres of crops enumerated above, an average gross return of \$20.40 per acre.

The excess of the total value of the productions of the farm for the year, as shown in the third column of this statement, over the total value of produce consumed, as shown in the fourth column, is \$1,433.05, which sum represents the net earnings of the farm for the year. The same balance is found by the following statement, which is based upon the inventories for the beginning and end of the year, together with the cash received from other sources than the year's productions, and expended for other purposes than the legitimate expenses of crop production:

## STATEMENT "C."

## FARM DEPARTMENT, OHIO STATE UNIVERSITY.

*Dr.*

To inventory of November 1, 1879.....	\$7,504 96	
cash on hand " " .....	414 09	
cash furnished by "Farm Committee" .....	1,754 70	
balance found as profit.....	1,433 05	
	<hr/>	\$11,106 80

*Cr.*

By inventory of October 31, 1880.....	\$8,025 36	
cost of improvements made.....	2,870 93	
cost of experimental work.....	170 84	
cash on hand October 31, 1880.....	39 67	
	<hr/>	\$11,106 80

The balance above found has been expended as follows:

In construction of permanent improvements.....	\$1,116 23
experimental work.....	170 84
increase of inventory (less cash on hand Nov. 1, 1879).....	106 31
cash on hand .....	39 67
	<hr/>
Total.....	\$1,433 05

This balance is equivalent to a little more than six per cent. on a valuation of \$100 per acre for the land in cultivation.

## THE DAIRY.

This portion of the farm business has nearly doubled within the past two years, our sales of milk amounting to \$1,890.64 this year, against \$957.53 last year. This result has been achieved through the labor of students, the immediate care of the cows and the selling of the milk being in their hands. The fact that it affords a

means of support to a number of young men who could not otherwise receive the advantages offered by the institution, taken in connection with the evident advantage to our customers of being able to procure milk of unquestionable purity, seem a sufficient justification for continuing the business.

The financial results of our dairy operations are shown by

STATEMENT "D."

DAIRY DEPARTMENT, OHIO STATE UNIVERSITY.

Cr.

By total sales of milk .....	\$1,890 64	
value of milk fed to calves .....	94 00	
“ of manure from 21 cows, @ \$6.....	126 00	
	—————	\$2,110 64

Dr.

To cash cost of milking and care.....	\$718 28	
use of horse in delivering.....	70 80	
cash expense and repairs.....	90 25	
cost of maintaining inventory .....	45 31	
keeping 21 cows for 12 months.....	735 00	
balance, profit .....	451.00	
	—————	\$2,110 64

The value of the milk fed to the calves is put at less than one-third what it would have brought if sold. In order to fill our stables with good cattle, we find it necessary to raise our best calves, even at an apparent loss. The value of the manure is a legitimate credit, since the entire cost of feeding and care is deducted from the gross receipts. This item is, probably, placed much too low. The profit-balance found represents a double-profit, one having already been made on the feed consumed, which is charged at market price, and which is chiefly, of course, a product of the farm.

Our dairy has not been free from the losses caused by the common ailments to which cows are subject. Such of these as have resulted in permanent decrease of value, are covered by the item of "cost of maintaining inventory," while those of a more temporary nature are included in the cost of keeping the herd, there being at no time more than fifteen to seventeen cows in milk.

THE GARDEN.

But little has been done, as yet, toward establishing a garden department, but what has been done shows that such a department may be established on the same principle as that on which the dairy is now conducted, and made not only a source of revenue to the farm, but a means of support and instruction to students.

CASH ACCOUNT.

The disposition made of the funds which have passed through my hands during the year, is shown by

## STATEMENT "E."

C. E. THORNE, *Manager, in account with Farm Department, Ohio State University.**Dr.*

To cash on hand Nov. 1, 1879.....	\$414 09	
cash received from Farm Committee.....	1,754 70	
cash received from sales of produce, etc.....	6,230 94	
	<hr/>	
Total cash receipts.....		\$8,399 73

*Cr.*

By expenditures for ordinary labor .....	\$2,454 94	
"                student        " .....	1,435 16	
salary for year .....	600 00	
	<hr/>	
To expenditure for labor and superintendence .....		\$4,490 10
By cash paid for live stock .....	\$490 00	
"                implements .....	230 87	
"                improvement material .....	1,429 16	
"                experiment material .....	65 84	
"                current expenses .....	1,654 09	
cash on hand .....	39 67	\$3,921 48
	<hr/>	
Total cash expenditures.....		\$8,399 73

## FARM EXPERIMENTS.

The experiments made upon the farm during the year have cost—

In material.....	\$65 84
In labor.....	105 00
	<hr/>
Total cost .....	\$170 84

These experiments were made under the direction of Dr. N. S. Townshend, Professor of Agriculture, and the following is a transcript of the report made to him of their results:

## EXPERIMENTS IN WHEAT CULTURE.

1. *Varieties*—Clawson wheat has been grown upon this farm for four consecutive seasons. It manifests an increasing tendency to lodge, and does not excel other varieties in productiveness. It shows but little tendency to rust, however, and has never smutted with us, for which reasons it would be a good variety to raise, were it not for the discrimination made against it by millers.

Fultz has done well with us, being early, having a short straw, and being fairly productive. It has shown a slight tendency to smut.

Velvet Chaff has uniformly given fair crops. It is free from the smut known as *Tilletia caries*, but is sometimes affected by the less troublesome variety known as *Uredo segetum* (the "blast" which also affects oats); it is earlier than Fultz, and valued



by millers as highly as the Mediterranean, which variety it excels in stiffness of straw.

Arnold's Gold Medal has made a fair yield when all conditions were favorable. It ripens late, but very suddenly, and breaks down and shatters badly unless promptly harvested.

Four varieties, the Silver Chaff, Golden Straw, Sandomirka, and Yellow Missouri have been sent to us from the Department of Agriculture at Washington, since 1878. Of these, the Silver Chaff has been one of our largest yielders during each of the three seasons in which we have grown it. Its straw is stiffer than the Clawson, and its grain harder, while it is as free from all disease. Our first crop of this variety was a few days later than the Clawson in ripening, but it has grown earlier each year, and both varieties ripened at the same date this season, viz.: June 28.

The Golden Straw has yielded fair crops of plump, heavy grain. It is early, and has a short, stiff straw, but has shown some tendency to smut.

The Sandomirka is a wheat recently introduced from Poland. It ripens very late—eight to ten days after the Fultz—but promises to be valuable in flouring quality.

The Yellow Missouri proved a failure with us this season.

Three varieties were received last Fall from the State Agricultural College of Missouri, viz.: Tappahannock, Russian No. 2, and Zimmerman. Of these the Zimmerman promises to be valuable, having a short, stiff straw, and a large, hard berry. It is a red wheat, and quite early.

For two seasons we have endeavored, but unsuccessfully, to acclimate a very large grained, white wheat, imported by the late John H. Klippart, from Australia.

We have only endeavored to compare the productiveness of the seven varieties first named. Our tests indicate the following yields per acre under like circumstances:

Silver Chaff.....	33 bus.
Gold Medal.....	31 "
Sandomirka .....	30 "
Golden Straw.....	28 "
Velvet Chaff.....	28 "
Fultz .....	27 "
Clawson .....	26 "

During the season of 1879 several hundred bushels of seed-wheat of several varieties were sold from this farm to parties living in various sections of Ohio, and in several neighboring States. After the last harvest a circular letter was addressed to each of these parties, asking for information as to the yield per acre of the wheat sent to him, and as to the quality of its grain and straw. The replies received are summarized in the following tables:

## I.—SILVER CHAFF.

Name of Producer.	Residence.		Kind of Soil.	Date of Sowing.	Quality of Straw.	Quality of Grain.	Bushels per Acre.	Variety com- pared with.	
	County.	State.						Name.	Y ld.
J. H. Blain.....	Madison .....	Ohio.	Clay.	Sept. 20	Good.	Med'm.	20	Egypt'n	19
D. N. Hine.....	Erie.....	Ohio.	Sandy loam.	Sept. 20	Good.	Good.	25	Fultz.	22
J. W. Morris.....	Fayette .....	Ohio.	Clay.	Sept. 20	Poor.	Good.	40	Fultz.	40
Wm. H. Durbin.....	Williams.....	Ohio.	.....	Sept. 28	Good.	Good.	27	Fultz.	27
H. C. Rudy .....	Stark .....	Ohio.	Yellow clay.	Sept. 17	Good.	Good.	30	Fultz.	35
Geo. H. Ruhlman...	Morrow.....	Ohio.	Yellow clay.	Sept. 5	Good.	Good.	24	Fultz.	20
D. Culver.....	Richland .....	Ohio.	Clay.	Sept. 9	Good.	Good.	30	Fultz.	30
Howard Hagler.....	Fayette .....	Ohio.	Clay.	Oct. 4	Poor.	Poor.	20	Fultz.	20
Jno. H. Harp .....	Washington....	Md.	Limestone.	Oct. 7	Med'm.	Med'm.	25	Fultz.	25
W. H. Rees.....	Fayette.....	Ind.	Sandy bottom.	Sept. 5	Good.	Med'm.	16	Fultz.	12½
Jos. A. Morgan .....	Monroe .....	N. Y.	.....	.....	Good.	Good.	25	Fultz.	35
E. M. Sheldon.....	Lorain .....	Ohio.	Dark loam.	Sept. 10	Good.	Good.	21	Clawson	27
H. C. Knoop.....	Miami .....	Ohio.	Clay loam.	Sept. 9	Good.	Good.	27½	Clawson	30
Thomas Loew .....	Allegan.....	Mich.	Clay loam.	Sept. 18	Good.	Good.	32	Clawson	25
University Farm...	Franklin .....	Ohio.	Clay loam.	Sept. 23	Good.	Good.	33	Clawson	26½
Average yields .....							26¼		26¼

## 11.—VELVET CHAFF.

Name of Producer.	Residence.		Kind of Soil.	Date of Sowing.	Quality of Straw.	Quality of Grain.	Bushels per Acre.	Variety compared with.	
	County.	State.						Name.	Y'ld.
Jno. C. Tisserat.....	Tazewell.....	Ills.	Black prairie.	Sept. 8	Good.	Good.	22	Fultz.	14
Reichardt & Son.....	.....	Ills.	.....	Oct. 1	Good.	Good.	30	Fultz.	22
R. I. Phillips.....	New Madrid...	Mo.	Black clay.	Oct. 1	Good.	Good.	23	Fultz.	25
Jno. H. Studt.....	Wyandotte.....	Kan.	Black loam.	Oct. 21	Good.	Good.	20	Fultz.	25
Jno. H. Harp.....	Washington....	Md.	Limestone.	Sept. 30	Good.	Good.	33	Fultz.	38
Jos. A. Morgan.....	Monroe.....	N. Y.	.....	.....	Good.	Good.	28	Fultz.	35
D. E. Fenn & Son..	Summit.....	Ohio.	Sandy loam.	Sept. 20	Good.	Good.	27	Fultz.	40
Thos. Sterrett.....	Erie.....	Pa.	.....	Sept. 1	Good.	Good.	20	Fultz.	25
Thos. Loew.....	Alleghen.....	Mich.	Clay loam.	Sept. 18	Med'm.	Good.	30	Clawson.	25
Geo. McKerrow.....	Waukesha.....	Wis.	Limestone.	Oct. 1	Good.	Good.	25	Clawson.	27
University Farm...	Franklin.....	Ohio.	Clay loam.	Sept. 28	Good.	Good.	28	Clawson.	26½
Average yields .....							26		27½

III.—ARNOLD'S GOLD MEDAL.

Name of Producer.	Residence.		Kind of Soil.	Date of Sowing.	Quality of Straw.	Quality of Grain.	Bushels per Acre.	Variety com- pared with.	
	County.	State.						Name.	Y'l'd.
Wm. H. Scott .....	Hamilton .....	Ohio.	Bottom.	Sept. 23	Poor.	Poor.	5	{ Mich'n Amber.	20
David Cowan .....	Belmont .....	Ohio.	Black.	Sept. 10	Good.	Good.	25		25
John Brown .....	Preble .....	Ohio.	Black.	Oct. 5	Good.	Good.	18½	Fultz.	23
Geo. Burr .....	Medina .....	Ohio.	Sandy loam.	Sept. 15	Good.	Good.	25	Fultz.	30
Wm. H. Durbin .....	Williams .....	Ohio.		Sept. 28	Good.	Med'm.	18	Fultz.	27
A. C. Beckwith .....	Huron .....	Ohio.	Black sand.	Sept. 15	Good.	Poor.	24	Fultz.	35
Jno. H. Harp .....	Washington .....	Md.	Limestone.	Sept. 29	Poor.	Poor.	20	Fultz.	20
C. H. Merritt .....	Clarke .....	Ohio.	Clay.	Sept. 12	Good.	Good.	18	Clawson.	18
Davis Hadden .....	Muskingum .....	Ohio.	Limestone.	Sept. 15	Good.	Good.	11	Clawson.	25
Geo. McKerrow .....	Waukesha .....	Wis.	Limestone.	Oct. 1	Good.	Good.	25	Clawson.	27
S. Price .....	Belmont .....	Ohio.	Clay.	Oct. 1	Good.	Good.	30	Clawson.	16
University Farm .....	Franklin .....	Ohio.	Clay loam.	Oct. 1	Poor.	Good.	31	Clawson.	26½
Average yields .....							21½		21½

IV.—SANDOMIRKA.

Name of Producer.	Residence.		Kind of Soil.	Date of Sowing.	Quality of Straw.	Quality of Grain.	Bushels per acre.	Variety com- pared with	
	County.	State.						Name.	Y'l'd.
A. McFarland .....	Washington .....	Ohio.	Clay.	Sept. 30	Good.	Good.	25		
C. H. Merritt .....	Clarke .....	Ohio.	Clay.	Sept. 18	Good.	Good.	25	Clawson.	18
R. Bloomer .....	Kent .....	Mich.	Black sand.	Oct. 1	Good.	Medi'm.	15	Clawson.	25
A. Lewis .....	Roanoke .....	Va.	Clay.	Oct. 25	Good.	Good.	35	Fultz.	13½
W. C. Snook .....	Vinton .....	Ohio.	Clay.	Sept. 30	Good.	Good.	24	Fultz.	15
W. H. Scott .....	Hamilton .....	Ohio.	Bottom.	Sept. 23	Good.	Medi'm.	18	{ Mich'n Amber.	20
University Farm .....	Franklin .....	Ohio.	Clay loam.	Oct. 1	Good.	Good.	30	Fultz.	27
Average yields .....							24½		19½

It will be noticed that in most cases the Fultz or Clawson has been used as a standard of comparison. The following summary gives the average of the reported yields of those varieties, together with the others distributed by us :

V. COMPARATIVE YIELDS.

Fultz .....	24	reports	average	25½	bushels	per	acre.
Clawson .....	10	"	"	23½	"	"	
Silver Chaff .....	15	"	"	26½	"	"	
Velvet Chaff .....	11	"	"	26	"	"	
Gold Medal .....	12	"	"	21½	"	"	
Sandomirka .....	7	"	"	24½	"	"	

A few of the reports received were incomplete, either from failing to give the yield of the wheat used as a comparison, or from giving only estimated yields. Such have generally been excluded, as also several from sections where wheat of all varieties has failed to fill from climatic causes. These failures have seemed to be more frequent south of the fortieth parallel.

From the general tenor of the letters from which the above reports have been taken, I draw the following inferences:

1. The silver Chaff wheat, while capable of large yields, and while showing excellent qualities of grain and straw, may yet prove to be somewhat sensitive to climatic changes, especially when sown upon blacklands. In speaking of the quality of its straw one correspondent says: "I do not believe any land can be too rich for it," which coincides with our own experience. Many praise it, but with some it has lodged. The quality of its grain has generally been satisfactory, but there have been a few cases in which it has seemed to suffer more than other varieties from the peculiarity of the past season, which caused thousands of acres of wheat to shrivel while filling, in some cases almost to the destruction of the crop.

2. While the Velvet Chaff has not yielded quite so heavily as the varieties with which it was immediately compared, its yield has still been considerably above the average, as shown by table V. In but one case is its straw ranked as anything but first-class, and in but two cases has the grain been poor; these were in Virginia by the side of Fultz, which made seven and thirteen bushels to the acre "badly shrunk." The Velvet Chaff has seemed to be especially adapted to the black prairies of Illinois, all reports from there being favorable. In one case it escaped the chinch-bug, on account of its earliness, while all other varieties suffered. In another case a car-load was ordered for this year's seeding as the result of last year's experiments.

3. The Gold Medal has suffered considerably from the unfavorableness of the season; winter-killing badly in some cases, and failing to fill in others, while in several instances the straw is reported as having broken badly. This wheat has shown itself capable of great yields under favorable conditions, but the indications are that it will not prove adapted to a large extent of country.

4. I can speak less confidently of the Sandomirka than of any of the previously named varieties; the tests with it were made on a small scale, as we sold it only by the pound. In two cases it failed entirely, while in Roanoke county, Virginia, it made a fine crop where all other varieties failed. Our own experience during two seasons has been favorable. Its extreme lateness—ten or twelve days later than Fultz—is against it for most sections, but the excellent quality of its grain and straw justifies a further trial.

In addition to the above varieties we distributed a few lots of the Golden Straw and Yellow Missouri wheats, from the results of which we conclude that the Golden Straw will prove a valuable variety on strong clay or sandy lands, but that it should be sown carefully on black lands, and never on very thin soils. From experiments made on this farm, we find that it requires heavier seeding than some other varieties. It is very early, the straw is short and stiff, and the grain, under favorable circumstances, is very heavy.

The Yellow Missouri failed generally, but made a fine crop in Washington county, Maryland.

A further inference which seems fairly deducible from our tables, is that the

Clawson is not our most productive wheat. We have noticed on this farm that the straw of the Clawson appeared to be losing its stiffness, while the grain seemed to be improving in quality. This improvement in the grain has not been maintained this season, however, while the buyers of the vicinity have finally executed their threat of lowering the price for Clawson from five to ten cents per bushel below that paid for red wheats. The importance of a very small increase in the productive power or the market value of a variety of wheat will be realized when it is remembered that the wheat crop of Ohio for 1878 was nearly thirty-five and a quarter million bushels from two and one-eighth million acres of land, an average of sixteen and a half bushels per acre. An increase in productiveness of half a bushel per acre would add more than one million bushels to the total crop, while an advance of five cents per bushel in the market value of the whole would amount to a total of a million and three-quarters of dollars.

(2). *Methods of culture—*

(a). THE EFFECT OF LATE PLOWING FOR WHEAT.

About the first of August, 1879, a portion of a field of oat stubble, containing an acre of land, was plowed and the surface pulverized with the smoothing harrow. Nothing further was done until the 23d of September, when the land adjoining was plowed and the whole thoroughly pulverized and sown with Arnold's Gold Medal wheat on the 26th of September.

The wheat sown on the earlier plowed strip, germinated promptly and grew finely; but that on the later plowing did not make its appearance for several days after the other, and then grew so much more slowly that the division between the two plowings could be distinctly seen until harvest.

In March the whole was sown with clover-seed, but, while that on the earlier plowing made a fair catch, that on the later was almost a total failure.

We harvested  $24\frac{3}{4}$  bushels per acre of nice, plump grain from the earlier plowing, and  $14\frac{3}{4}$  bushels, badly shrunken, from the later.

(b). EARLY AND LATE SOWING OF WHEAT.

In the wheat crop of 1879 we commenced a series of experiments designed to ascertain the proper time for sowing wheat in this neighborhood. Five sowings were made on bottom land; one each on the 9th, 16th, 23d, and 30th of September, and 7th of October, in plots two rods wide by 40 long, containing one-half acre each. The variety of wheat used was Clawson, and it was sown at the rate of six pecks per acre. The result was as follows:

That sown September 9th, yielded $33\frac{2}{10}$ bushels per acre.					
"	"	16th,	"	$30\frac{3}{10}$	" "
"	"	23d,	"	$36\frac{4}{10}$	" "
"	"	30th,	"	$32\frac{7}{10}$	" "
"	October	7th,	"	$26\frac{2}{10}$	" "

The first two sowings were perceptibly injured by the fly.

These experiments were continued in the crop of 1880 by making ten sowings on the same dates as those of 1879, two strips being sown on different portions of the

field on each date, the strips being  $1\frac{1}{2}$  rods wide by 39 rods long, and containing one-third acre each. The soil selected this time was upland, with a westerly exposure. The variety of grain used was Silver Chaff, sown at the rate of six pecks per acre. The result was as follows:

That sown September 9th, yielded  $32\frac{1}{2}$  bushels per acre.

"	"	16th,	"	33	"	"
"	"	23d,	"	$33\frac{1}{2}$	"	"
"	"	30th,	"	$29\frac{1}{2}$	"	"
"		October 7th,	"	$26\frac{1}{2}$	"	"

In this case we found no indication of the fly.

(c). THICK AND THIN SOWING OF WHEAT.

In the fall of 1877, a portion of a field of bottom land which had been put in the most thorough condition by early plowing and repeated harrowings, was divided into plots of equal size and of as nearly as possible equal fertility, and sown at the rate of 3, 5, 6, 7, 8 and 9 pecks per acre. The result was as follows:

3 pecks seed yielded at the rate of  $32\frac{1}{2}$  bushels per acre.

5	"	"	"	$33\frac{1}{2}$	"	"
6	"	"	"	$35\frac{1}{2}$	"	"
7	"	"	"	$37\frac{1}{2}$	"	"
8	"	"	"	$37\frac{1}{2}$	"	"
9	"	"	"	$31\frac{1}{2}$	"	"

The following season the experiment was repeated in the same field and with the same preparation of soil and seed. The number of plots was increased, however, to five for each quantity of seed; the plots being so distributed as to counter-balance, so far as possible, any irregularities of soil. The result was as follows:

$2\frac{1}{2}$	pecks seed yielded	$27\frac{3}{10}$ to $31\frac{3}{10}$	bushels per acre, average	$29\frac{6}{10}$
3	"	$29\frac{1}{10}$ to $31\frac{2}{10}$	"	$30\frac{3}{10}$
4	"	$31\frac{5}{10}$ to $36\frac{6}{10}$	"	$34\frac{2}{10}$
$5\frac{1}{2}$	"	$32\frac{8}{10}$ to $37\frac{5}{10}$	"	$34\frac{9}{10}$
7	"	$33\frac{1}{10}$ to $40\frac{3}{10}$	"	$35\frac{9}{10}$
9	"	$32\frac{5}{10}$ to $35\frac{6}{10}$	"	$34\frac{2}{10}$

Seven pecks of seed, therefore, gave us four and one-half bushels additional crop in 1878, and five and one-half bushels in 1879, over what we obtained from sowing three pecks only. In both cases the seed was drilled, the variety being Clawson.

(d). SPRING CULTIVATION OF WHEAT.

The experiment of sowing in drills double the ordinary distance apart, and of cultivating the interspaces in the spring, was repeated this season for the third time, with Gold Medal wheat sown on very thin land; the sowing and cultivation being done with the "Groff" attachments invented for the purpose. The cultivated wheat yielded at the rate of sixteen bushels per acre, that adjoining, not cultivated, at the rate of nineteen bushels, a result in accordance with our previous experiments.

## CORN CULTURE.

1. *Varieties*.—We have grown over three seasons a distinctly marked variety of yellow corn, known as the “Leaming,” or “Clinton” corn, originated by Christopher Leaming, of Clinton county. We value this variety especially for its earliness and productiveness, while the ease with which it is husked, and its beautiful, golden color, are further desirable qualities.

We have grown one crop of a variety called, in Harrison county, the “Porter” corn. It is somewhat later than the Clinton in ripening, and seems to have a slightly larger proportion of cob to grain, but it is productive, and beautiful in appearance, and would seem to be specially adapted to the bottoms of the Scioto and Miami.

Last spring we received, through the kindness of Claude V. Burke, Esq., of Yolo, California, a few kernels of the “Cuzco” corn, a variety grown by the Cuzco Indians, in the Andes mountains, and forming a large portion of their food. The kernels are as large as Lima beans, and are surrounded by such a thin bran that they are prepared for the table by simply boiling them. Part of the seed was started in sods in the hot-bed, and all was planted in the open air in May. The corn grew luxuriantly, but never formed a kernel.

2. *Methods of Culture*.—The experiment of deep plowing for corn was repeated in a field which has been in corn for three successive seasons, without manure; three strips, containing nearly two acres each, being plowed to the depth of eleven inches with a double plow, and two strips of the same size, and alternating with those deep-plowed, being turned to the depth of eight inches. Each of the above strips contained two shock rows, of twenty shocks each, the corn being planted at the rate of twenty-one and one-half shocks per acre. The results of this experiment are tabulated below:

1st shock-row, deep-plowed, yielded 63.64 bush. grain, and 3,375 lbs. fodder per acre.							
2d	“	“	“	62.35	“	3,257	“
3d	“	shallow-plowed,	“	57.19	“	2,881	“
4th	“	“	“	62.34	“	3,069	“
5th	“	deep-plowed,	“	60.13	“	3,252	“
6th	“	“	“	66.00	“	3,354	“
7th	“	“	“	60.63	“	3,139	“
8th	“	“	“	60.41	“	3,053	“
9th	“	shallow-plowed,	“	53.32	“	2,676	“
10th	“	“	“	53.68	“	2,870	“
Av. yield for deep-plowing,				“	62.19	“	3,237
“				“	shallow-plowing,	“	56.63
Incr. yield for deep-plowing,				“	5.56	“	363

The value of this increased yield is, at this year's prices in this vicinity, \$1.83 for the grain, and 62 cents for the fodder; total, \$2.45. The soil upon which this experiment was made is alluvial, naturally under-drained, and largely formed from the Huron shale.

## POTATO CULTURE.

Early Vermont and early Rose potatoes were planted side by side, and received, as nearly as possible, the same care. The Vermonts were ready for use several days



sooner than the Roses, and yielded at the rate of 135 bushels per acre, while the Roses yielded at the rate of 127 bushels.

For two seasons we have used London Purple exclusively for poisoning the potato bug, and consider it quite as satisfactory as Paris Green.

The farm is indebted to Mr. S. H. Fox, of St. Louis, Missouri, for an apparatus for applying the poison in water. The apparatus was received too late for this season's operations, but, from its construction, I believe it will prove well-adapted for the purpose. It divides the liquid into a perfect spray, thus preventing the excessive waste of the poison, which seems unavoidable in other methods of water-poisoning.

#### SOME COMMERCIAL AND OTHER FERTILIZERS ON POTATOES.

The following fertilizers were applied in the row at the planting of a plot of Early Rose potatoes, on the 17th of April, viz.: sulphate of potash, at the rate of 100 pounds per acre; "tankage", made by the Cleveland Provision Co., at the rate of 200 pds. per acre; common salt, at the rate of 200 pds. per acre; wheat bran, at the rate of 1,000 pounds per acre; corn-cob ashes, at the rate of 100 pounds per acre, and well-rotted barn-yard manure, at the rate of five cords per acre. These fertilizers were applied to alternate rows, either singly or in the combinations indicated below, and all, except the yard manure, were scattered directly upon the potatoes. The manure was applied after the potatoes had been partially covered with earth. The following diagram shows the combinations in which the fertilizers were applied, the cost of the application, the rate of yield of the crop, and the increased yield that was apparently due to the fertilizers, with its value:

No. of plot.	Fertilizer.	Cost of application.	Yield per acre.	Increase per acre.	Value of increase.
I	None.....		88.7 bu.		
II	Yard manure .....	\$5 00	99.6 "	10.9 bu.	\$5 45
III	Bran .....	7 00	108.4 "	19.7 "	9 85
IV	Potash, tankage and salt.....	7 90	104.1 "	15.4 "	7 70
V	Tankage and salt.....	4 30	93.7 "	5. "	2 50
VI	Potash and salt .....	3 60	106.8 "	18.1 "	9 05
VII	Potash and tankage.....	7 00	108.7 "	20. "	10 00
VIII	Yard manure and salt.....	5 60	95.5 "	6.8 "	3 40
IX	Yard manure and tankage.....	9 00	109.1 "	20.4 "	10 20
X	Yard manure and cob ashes.....	7 00	122.8 "	34.1 "	17 05

It has been stated above, that the ash of corn-cobs was one of the fertilizers used in this experiment. This ash, when pure, should contain 52 per cent. of potash, and it was used in the place of the sulphate of potash on a duplicated series of plots, in order to compare its effect with that of the commercial sulphate. The plots fertilized with sulphate of potash yielded at the rate of 100.9 bushels per acre; those upon which the cob-ash was used instead, yielded at the rate of 117.9 bushels per acre. The sulphate of potash used, contained about 38 per cent. of actual potash; hence, we may conclude that the potash in the cob-ash is quite as available as plant-food as that in the sulphate, and that, if the latter is worth \$55.00 per ton, (the rate paid for this lot), then the ash would be worth about \$70.00. Evidently



this question should be more fully investigated, as large quantities of this ash are yearly being made by the corn-shipping warehouses of the West, whose engines are chiefly, if not altogether, fed upon corn-cobs.

The object aimed at in the use of bran as a fertilizer was two-fold; first, to test its availability as a conveyer to the growing crop of the nitrogen, potash and phosphoric acid, which are among its chief constituents, and next, to inquire into its feeding value. Apparently there is occasion for further investigation of these questions, for if the raw bran is worth as much as a fertilizer, as this experiment would seem to indicate, it may well be used liberally as a feeding stuff; since its passage through the animal organism must add to, far more than it takes from its manurial value.

Salt was apparently a detriment to the crop, to the extent of from three to six bushels per acre, except, possibly, when used with potash alone, as shown by comparing the yields of plots VIII with II, and IV with VII. If we accept this supposition, we shall find an increase due to the tankage of ten bushels per acre, as shown by comparing plots IX with II, and V with I. This would give about the same value for potash, as shown by the yields of plots IV, VII, and III, the amount of bran used containing about one-third the quantity of potash, and nearly twice as much phosphoric-acid, as the applications to plots IV and VII, with the addition of 22 lbs. nitrogen. In plot X the cob-ash was added at the rate of 200 instead of 100 lbs. per acre, thus giving three times the amount of potash that was given to the other plots. The yield of this plot would indicate that the limit of the profitable use of this fertilizer had not yet been reached.

The tankage used consisted of dried blood and other refuse of the slaughter-house, and contained 7.42 per cent. of nitrogen, and 8 per cent. of phosphoric acid, as shown by the analysis of Prof. N. W. Lord. It was used in this experiment as a source of phosphoric acid.

#### FORAGE CROPS.

Experiments have been made with German millet, with common field corn, and with rye, as secondary forage crops, with the following results:

(a) An acre of land from which we had just harvested a crop of wheat, was plowed and sown with German millet, on the 21st of July. On the 21st of September the crop was cut, yielding 2500 lbs. of good hay.

(b) Two acres which had been in rye were plowed and sown with common field corn, on the 30th of July, in rows 28 inches apart. No cultivation was given, the rapid growth of the corn during August shading the ground so that there were but few weeds. The yield was at the rate of 3600 lbs. of cured fodder per acre.

(c) A seventeen-acre corn-field was sown with rye, about the middle of August, 1879, at the rate of a bushel-and-a-half per acre. As soon as the corn could be husked, a portion of the fodder was removed and stacked, and the part of the field thus cleared was inclosed with a portable fence. Twenty cows were then allowed to graze the rye, and as fast as it was eaten off the range was enlarged by moving back the portable fence. The cows were kept off in wet weather, but the field furnished their pasture ground for six weeks during the fall, and six more during the spring, when two acres of the seventeen were still untouched. The pastured portion of the field was plowed early in May, and planted with corn, which has yielded at the rate of

seventy-three bushels of shelled corn per acre. The extra flow of milk obtained from the rye would fully balance the cost of seeding and care, so that we have had the chief support of twenty cows for three months, as the net product of the rye, or at least six dollars per acre, while the succeeding corn crop has been benefited, rather than otherwise, by the intermediate rye crop, as shown by its yield.

As has been stated, these crops were grown as secondary crops, the millet and corn occupying the space between two crops of wheat, or between a wheat and a spring crop, and the rye that between two crops of corn. Our experience shows that the income of the farm may be very largely increased, temporarily at least, by such management. The question of its effect upon the land is an important one, and one which time alone can decide. The probability is, however, that this effect will be favorable rather than otherwise, by enabling the farmer to keep more stock, and thus make more manure, while the exhaustion of the soil by these green crops which form no seed must be a slow process, certainly not a more speedy one than that of allowing the fields to be occupied with such a growth of pernicious weeds as is generally seen on our stubble-fields in August, and too often on our corn fields.

(d). A small quantity of the southern Cow-peas was sown in the Spring. They made a rank growth, and matured some seed, but they require the whole season for their growth, and will probably not be found so profitable here as some of the leguminous plants that are better adapted to a northern climate.

(e). We received a bushel of seed of the "Desmodium Molle" from the Agricultural Department at Washington. This is a leguminous plant, which is being used to recuperate the worn-out soils of some of the southern States; the seed was carefully sown, but failed to germinate.

(f). We have made a partial test of Dhouira, Egyptian, or Rice-corn—a plant which is attracting considerable attention in California and Kansas, on account of its ability to resist drouth—with results which justify a further trial. This plant is cultivated both for its seeds and its fodder; the seed grows after the manner of common sorghum, broom corn, etc., except that the head is very dense, and turns downward, forming a perfect shepherd's crook. One of the striking peculiarities of the plant is its habit of sending off branches or suckers, both from the root and from the upper nodes, during the latter part of summer. In southern latitudes the upper branches produce a second crop of seed, ripening about a month later than the main crop; with us this habit is only valuable in that it gives an abundant mass of forage, which is fresh, and at its best at the same time that the seed is ready to harvest.

It is claimed that this plant will produce as much grain to the acre in ordinary seasons as Indian corn, and that it produces fair crops during seasons of drouth which are fatal to the corn crop. Our experience apparently confirms the first part of this claim. In feeding quality the grain of Dhouira is shown to be fully equal to that of corn, by chemical analysis made at the University of Kansas. For this fact I am indebted to the excellent report of the experimental work of the Agricultural Department of the University of Tennessee, by Prof. J. M. McBryde. While the Dhouira will never take the place of maize in the Agriculture of Ohio, I expect it to prove a valuable supplementary crop for certain purposes.

## GRASSES.

An experiment has been instituted with the design of comparing Orchard grass, English Blue grass, and Perennial Rye grass. No results can be given until after another season's growth.

## CLOVER.

We have had serious difficulty in securing a catch of clover, owing to drouths in April and May. We this year harrowed in all our clover-seed with a fine-toothed spike harrow. While we are not able to say positively that the harrowing was a benefit to the clover or the wheat, we can say that it was certainly no disadvantage to the former, and apparently none to the latter, and that we shall certainly repeat the operation in future seedings.

## THOROUGH DRAINAGE.

An attempt has been made to compare the effects of thorough with partial drainage. Four lines of three-inch tile were laid in one of the wettest fields of the farm, the drains being in two pairs, two rods apart in the pairs, with a space of five rods between the inside drains of the pairs. No results can yet be given, as the drains were made too late to be of material benefit to the crop of this year.

## SORGHUM CULTURE AND MANUFACTURE.

Two varieties of sorghum were grown this season, the "Minnesota Early Amber," and "Hedges Early Orange." The Amber yielded at the rate of 80 gallons of syrup per acre, the Orange at the rate of 120 gallons. This difference in yield is hardly a just measure of the difference between the varieties, however, as both were planted the same distance apart ( $3\frac{1}{2}$  by  $3\frac{1}{2}$  feet), while the Amber, on account of its smaller habit of growth, should have been planted not further apart than 2 by 3 feet. Both varieties yielded syrup of uniformly excellent quality; that of the Orange cane, however, contained a large quantity of lime, which remained in suspension in the syrup, instead of adhering to the bottom of the pan.

A portion of the juice from each of these canes was clarified with lime, and the lime afterward neutralized with sulphurous acid, a process which uniformly resulted in darkening the syrup, although it increased the proportion of cane-sugar, as shown by the following analysis of syrups from the Orange cane, kindly made by Prof. N. W. Lord, State Analyst.

Sample 1, clarified, gave 40.9 per cent. grape-sugar, and 29.7 per cent. cane-sugar.

Sample 2, unclarified, gave 44.0 per cent. grape-sugar, and 26.1 per cent. cane-sugar.

C. E. THORNE, *Farm Manager.*

## RECORD OF PROCEEDINGS

### OF THE BOARD OF TRUSTEES OF OHIO STATE UNIVERSITY.

COLUMBUS, OHIO, *January 8, 1880.*

Board met pursuant to adjournment at 9 o'clock A. M.

Present—Messrs. Anderson, S. H. Ellis, Godfrey, Jamison and Johnston.

Executive Committee made report of proceedings to date.

The *President* made report of all conveyances of *Virginia Military lands* conveyed by him since November 15, 1879.

The Secretary reported the purchase of books ordered, viz.: "American Jersey Cattle Club Register," and "North Americans of Antiquity."

Prof. McFarland was instructed to delay the purchase of lithographic stone to display farm divisions, etc., until they were more definitely arranged.

In consequence of clerical omission to insert in June, 1879, minutes, the appropriation of \$150 for student helps in the Chemical Department, it was

*Ordered*, That \$150 be now appropriated.

Mayor Collins and Mr. Frambes appeared before the Board in relation to the extension of Neil Avenue Street Railway to the north line of the College grounds, or, at least, to a point opposite the University buildings on the west side.

After consideration, the whole subject was referred to the Executive Committee and President of the Board.

Messrs. Godfrey and Johnston made report on the claim of W. H. Leete, and asked to be continued until the Secretary could obtain information from Mr. Leete concerning certain notes, amounting to \$71.75, reported to have been paid him while Agent of the College.

*Ordered*, That \$40 be appropriated for assistant in Mathematical Department.

*Moved*, That Prof. Robinson be allowed to expend a sum not exceeding \$50 for supplies for the Physical Department during the remainder of this collegiate year, and that a sum not exceeding one hundred dollars (\$100) be allowed for the same time to be expended by Prof. Norton for supplies for the Chemical Department.

Carried.

On motion, the degree of *Mining Engineer* was conferred on *Robert S. Towne*.

The bill of *J. T. Harris*, Architect, for \$227.50, was allowed, and payment ordered.

A final settlement with *Clarke & Fuhey*, contractors for the building of the Mechanical Laboratory, was referred to the action of the Executive Committee, at their discretion.

A proposition was received from *Thomas Mathew* looking to the purchase of apparatus in the Department of Drawing for the sum of \$439.50, whereupon it was

*Resolved*, That the proposition of *Prof. Mathew* to sell his apparatus now in his department, be held for consideration, and that one hundred dollars (\$100) be allowed him for the use of said apparatus, from the time it was placed in the University, to the close of the present college year, and that in case the Board hereafter buys said apparatus, that then the \$100 hereby allowed be deducted from the purchase price to be paid.

*Ordered*, That the amount of twenty-six dollars and eighty-five cents (\$26.85), paid by *Dr. Townshend*, for the purchase of a *Veterinary Model* (horse's foot), be paid back to him.

*Resolved*, That *President Orton* be directed to make an annual subscription for the following journals, viz.: *American Journal of Science*, *Van Nostrand's Engineering Journal*, *Scientific American*, *Nature*, *Journal of Chemical Society* and *North American Review*.

The President of the Board was requested to correspond with *Hon. George L. Converse*, concerning the military claims of Ohio against the United States.

*Captain C. A. Barton*, to whom was referred the request of *Mr. Kendrick*, concerning the withdrawal of certain caveats, made report, whereupon the following was adopted:

WHEREAS, *Captain C. A. Barton* has recommended the withdrawal of the caveats filed in the general land office of the United States, against the issuing of patents for the within (34) described surveys within the Virginia Military District; therefore,

*Resolved*, That the Board does hereby withdraw said caveats, and authorizes the Secretary of this Board to certify the same to the Commissioner of the General Land Office for his action, accordingly.

On motion, the Board adjourned to meet at the call of the President.

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COLUMBUS, O., February 3, 1880.

No quorum of the Board was had on February 2, at 8 o'clock, P.M., and the Board met at 9 o'clock to-day.

Present—Messrs. Jamison, Johnston, Goufrey, Anderson, and Alston Ellis.

The minutes of the previous meeting were read and approved. The report of the Executive Committee was read and approved.

On motion, it was

*Resolved*, That Attorney-General Nash be requested to take charge of all cases of litigation now pending between the Board of Trustees and other parties, and that the Secretary be requested to notify him of this action.

The Executive Committee having declined to take definite action in the matter of granting the *Consolidated Street Railroad Company* the privilege of extending their track into the University grounds, the Board decided to postpone further consideration thereof until their next meeting.

On motion, the question of opening up *Woodruff Avenue* from High street to the river, and a change of the *water-drainage* on High street, was referred to the Executive Committee and President of the Board.

The following proposition was presented by C. A. Barton, and approved by the Board:

To SMITH GRIMES, *Esq.*:

To effect a compromise and to avoid litigation, as the Agent of the Ohio State University, (subject to the approval of the Trustees of said University), I propose to sell and convey to you the whole of lots Nos. 131, 132, and 123, as made by the Agricultural and Mechanical College, excepting 50 acres heretofore sold by contract to Mr. Kisling, and 40 acres claimed by Nancy Wason, as a homestead, for the sum of *three hundred and seventy-five dollars* (\$375.00). You to relinquish by deed all claims on this 50 and 40 acres to said parties, respectively.

Dated this 2d day of December, 1879.

(Signed)

CHAS. A. BARTON, *Agent*

*Ohio State University Lands.*

On motion, the Secretary was instructed to pay W. H. Leete, \$28.25, balance due on account of legal services, as per bill rendered, of \$303.00, after deducting \$25.00, amount of Shively, note and \$21.75, amount of Reno note, and should it appear by Leete's old account that these notes have been accounted for by said Leete, these amounts are to be refunded to him.

Reports concerning improvements to college campus, and as Bursar for the first term of current year, were presented by Prof. McFarland, and approved.

The account of Attorney-General Pillars, for legal services, was referred to the President of the Board, with instructions to confer concerning the same with the present Attorney-General.

On motion, it was

*Resolved*, That the Secretary be instructed to accept the policies of insurance, presented by John Rea, on the Mechanical Laboratory and boiler-house for \$7,500, and that he take \$2,500 more on the same buildings, in good companies, represented by Zelotes Wood.

The settlement of the old account of George Weinman, deceased, for repairs to boilers and for an unfinished engine, ordered by a previous Board, of said Weinman, was referred to the Executive Committee, with power to act.

A request was made by Prof. Tuttle, for a leave of absence without pay for one year, to perfect certain studies connected with his department in the University.

The granting of said request was deemed inadvisable.

After conference in relation to the management of the farm, which the Board had examined on the 4th (to-day), the Board adjourned, subject to the call of the President.

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COLUMBUS, O., *February* 25, 1880.

Board met at 8 o'clock at the Neil House. The following members were present: Messrs. Godfrey, Jamison, A. Ellis, S. H. Ellis, and Stephen Johnston.

The minutes were read and approved.

Discussion concerning the propriety of asking the Legislature to repeal the law making *Military Drill* in the University optional, was had. Further consideration of the subject was postponed.

The following preamble and resolution was adopted.

WHEREAS, A resolution and bill is now under consideration in the General Assembly of Ohio, proposing to grant the Ohio State University all claims of the State of Ohio against the General Government, on account of the 5 *per centum* due to the State for land warrants located by the State;

*Therefore, resolved*, That the chairman of this Board be and is hereby authorized to appoint an agent or agents, and to take other necessary steps for the collection of said dues, whenever the General Assembly of Ohio shall determine to grant the said claim to the University.

Communications from Attorney-General Nash and other able lawyers, touching the legality of Ex-Attorney Pillars' account for legal services rendered the University, were read, whereupon the Board ordered the account of General Pillars to be paid.

Capt. Barton was authorized to arrange with S. Kendrick for the survey and sale of a certain piece of land, of 300 or 400 acres, discovered and reported by him, under the terms of a proposition submitted to the Board by said Kendrick at a previous meeting.

The matter of extending into the College grounds the line of the *Consolidated Street Railroad* was laid on the table.

The claim of Attorney Billings, of Adams county, for legal services and costs paid in the case of W. J. McKinney, et al, amounting to \$50.00, was allowed and ordered paid.

The following preamble and resolution was adopted, viz. :

WHEREAS, *Prof. T. C. Mendenhall*, who held the chair of Physics and Mechanics in this Institution from its opening until June, 1878, with great credit to himself, and with equal advantage to the University, did at that date resign his position to accept the very honorable and responsible appointment of Professor of Physics in the Imperial University of Japan ; and

WHEREAS, The Board of Trustees now learns with great satisfaction that Professor Mendenhall is willing to return to his former field of labor, upon the expiration of the two years covered by his original agreement with the Japanese Government, and such additional time as he deems necessary for the giving of a fair and honorable notice of withdrawal from the institution in which he has been treated so considerately ; it is therefore

*Resolved*, That Prof. T. C. Mendenhall is hereby appointed to the professorship of Physics in the Ohio State University, and that his term of service shall begin with the college year, that opens September, 1881.

*Ordered*, That James B. Jamison be and is hereby authorized to draw an order upon the Treasurer of the Ohio State University for an amount of not exceeding four hundred dollars (\$400), to pay to C. E. Thorne for money expended in improvements and repairs made upon the University farm.

*Ordered*, That the Secretary of this Board be and is hereby authorized to draw his warrant upon the Auditor of State, payable to the Treasurer of the University, for the sum of five thousand one hundred and fifty dollars and ninety cents (\$5,150.90), appropriated by the 64th General Assembly to reimburse the Ohio State University for moneys expended in paying the reasonable and necessary expenses of the Trustees, while engaged in the discharge of their official duties.

Board adjourned.

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COLUMBUS, *April 20*, 1880.

A called meeting of the Board of Trustees was held this day at the University. Present, Messrs. Johnston, Godfrey, Jamison, and Anderson.

After inspecting the grounds, it was

*Resolved*, That the Board approve of opening Woodruff avenue on the north side



of the College grounds, from High street to the centre of the Olentangy river, and that the President of the Board be and is hereby empowered to take necessary steps for the accomplishment of the same.

On application of Prof. Norton, it was

*Ordered*, That he be instructed to purchase in Europe the necessary chemicals for the supply of the Chemical Department for the next year, to an amount not exceeding \$600 in cost, delivered here.

*Ordered*, That bills for the drainage of the President's house, amounting to \$25.32 be allowed.

*Ordered*, That ten dollars (\$10.00) be allowed for the purchase of fossils, from Rev. Mr. Stidham, to be placed in Geological room.

*Ordered*, That the Secretary be and is hereby authorized to draw his warrant on the Auditor of State for any and all moneys appropriated by the 64th General Assembly for the Ohio State University, wherever the accounts and bills chargeable to the several appropriations have been approved, as follows: "For farm improvements and stock," by Chairman of Farm Committee; "for wall and table cases of Geological Museum, and supplies for Mining Department," by Executive Committee, and "for expenses of Trustees," by President of the Board.

The Secretary reported the appropriation made April, 1880, to be, "for farm improvement and stock, \$1,500"; "for wall and table cases, \$1,000"; "for supplies for Mining Department, \$500", and "for expenses for Trustees, \$350."

*Ordered*, That the amount appropriated for wall and table cases in the Geological Museum be expended under the direction of the President of the Faculty and the Secretary of the Board.

The Bursar's report of term fees collected was read and approved.

*Ordered*, That the Farm Committee be and are hereby authorized to expend, according to their discretion, the \$1,500 appropriated for farm improvement and stock.

The Secretary was instructed to prepare in book form a complete detailed statement of the Virginia Military Lands, showing the number of lots, number of acres belonging to each lot, the appraised value per acre, and if sold since Nov. 15, 1878, to whom, and at what price. Also, of the number and amount of all notes in the hands of the Treasurer, and when payable. Said book to be kept for reference and further entry as may be demanded.

*Resolved*, That Prof. McFarland be and is hereby authorized to take exclusive control of college campus, and all grounds inclosed within the fence bounding the same; and that he employ a man at a compensation not exceeding \$35.00 per month, to be under his supervision, to work upon the same, and act as lawn-keeper.

Passed.

On motion, the following preambles and resolutions were adopted:

WHEREAS, In the judgment of the Faculty of this Institution, as expressed in the following scheme, it is deemed practicable and desirable to establish a closer connection between the University and the High Schools of this State; and

WHEREAS, The Board of Trustees looks with special interest to such a result; therefore, be it

*Resolved, first,* That graduates of High Schools in cities of this State, whose population equaled or exceeded 5,000 at the last census (1870) shall be admitted to Freshman standing in the various courses of the College; provided, that in cases where the course of study, pursued by such a graduate, does not include all the studies required as preparatory to the course elected, such student shall be required to pass examination in any or all such studies as are not included.

*Second,* That graduates of such other High schools of the State as are found, upon examination by the Faculty, to maintain a course of study sufficiently extended and thorough, to insure the needful preparation, shall in like manner be admitted to College standing.

Board adjourned.

COLUMBUS, OHIO, *June 17, 1880.*

In pursuance of call, the Board met at 8 o'clock A. M.

Present—Messrs. Johnston, Jamison, Miller, S. H. Ellis and Alston Ellis.

The minutes of the previous meeting were read and approved.

The President of the University made report of the condition and wants of the various departments, when the following appropriations were ordered for the ensuing college year:

For the Physiological Laboratory.....	\$100 00
“ Agricultural Department (models, etc).....	1,000 00
“ Mechanical Department.....	300 00
“ Chemical Department (chemicals, etc).....	300 00
“ Library .....	500 00

For student helps, the following were ordered, viz.:

For Department of Physics (per annum) .....	\$200 00
“ Chemistry .....	200 00
“ Mathematics.....	100 00
“ Latin and Greek, subject to the distribution of the President and Professor .....	300 00
For clerical work in President's office.....	75 00
For mechanical work in Laboratory .....	25 00
• For Librarian (Miss S. Glover).....	125 00

On motion,

*Resolved*, That the present Faculty of the Ohio State University, with the exception of Thomas Mathew, be continued for one year, and that the salaries of Professors Smith, Short and Lord, and Miss Alice Williams, be increased one hundred dollars each per annum.

*Ordered*, That the bill of Leo. Weltz, to the amount of \$100, be paid.

*Ordered*, That \$400 to be drawn by the Farm Committee from the appropriation for farm improvement and stock.

*Ordered*, That \$100 be advanced to the Farm Committee, to be used for current expenses.

After a full consultation with the President and Professor Lomia, the following resolution was offered by S. H. Ellis :

*Resolved*, That military drill, from and after the beginning of the next college year, be made compulsory upon all male students connected with the University for the first two consecutive years of their course, with the exception of those physically unfitted for such drill, and such as may be excused by the President on reasonable grounds.

Mr. Alston Ellis offered the following substitute :

*Resolved*, That the military drill, from and after the beginning of the next college year, be made compulsory upon all male students connected with the University, with the exception of those physically unfitted for such drill, such as may be excused by the President of the Faculty, upon reasonable grounds, and the regular members of the Junior and Senior classes.

Passed.

The report of the Bursar for the spring term was made and accepted.  
Also, the Report of the Superintendent of the College Campus.

*Ordered*, That the bill of Attorney Billings, of Adams county, for fees in the case of the Ohio State University against Samuel Cooper et al., amounting to \$35.00, be allowed for payment.

*Resolved*, That Dr. Townshend be given the privilege of visiting various institutions in the United States and Canada, where instruction in agriculture is given, and that a sum not to exceed \$50.00 be appropriated towards paying in part the expenses of such visit.

Mr. — Underwood appeared before the Board, and stated that he had discovered lands in Franklin county belonging to the University, whereupon the Board authorized the Secretary to enter into contract with said Underwood for the survey, appraisal and sale of said lands, on the same terms as was agreed upon in the contract with W. E. Orr and W. H. Gaber. Recorded on page 53 of this Minute Book.

The Executive Committee was instructed to make such repairs and improvements to the dormitory as they should deem best.

Captain C. A. Barton presented a report of his agency in the management of the Virginia Military lands since November 15, 1879. Whereupon his salary, amounting to \$420, and bill of expenses, including costs of suits in Pike county, amounting to \$695.37, were ordered to be paid.

*Ordered*, That the sum of \$200 be and is hereby appropriated for advertising, to be expended under the direction of the President of the Board and the President of the University.

*Ordered*, That the salary of Professor N. E. Lord, for the coming college year, be paid as follows, viz.: Six hundred dollars (\$600.00) from the State appropriation for analysis required by State law, and the balance from the interest fund of the University.

On motion, a recess of the Board was taken until June 22d, at 2 o'clock P. M., at which time all the members of the Board, except S. H. Ellis, were present.

Upon the recommendation of the Faculty, the following degrees were conferred, viz.:

*Bachelor of Arts*—Edwin E. Corwin, Franklin county.

“ “ Arthur Cunningham, Franklin county.

“ “ John Paul Jones, Franklin county.

“ “ Florizel Smith, Fairfield county.

“ “ John C. Ward, Lake county.

“ “ Alice M. Townshend, Lorain county.

*Bachelor of Science*—Sidney H. Short, Franklin county.

*Mining Engineer* (M. E.)—Hiram D. Gregory, Scioto county.

*Mechanical* (Mech. Eng.)—John H. McCormick, Franklin county.

*Certificate of Proficiency*—To Miss Katharine A. Mathews, in English language and literature, German language and literature, French language and literature, and Free-hand drawing.

Judge Harrison appeared before the Board, and presented the claim of F. M. Beebe for reimbursement in the sum of \$409.10, expended in connection with his purchase of Virginia Military Lands, whereupon it was

*Resolved*, That the claim of F. M. Beebe be referred to Messrs. Johnston and Godfrey, (members of the Board) with full power to act.

*Resolved*, That President Orton, with the resident members of the Executive Committee, be empowered to distribute the fund appropriated for the library.

*Ordered*, That the sum of \$25.00 be and is hereby appropriated for the college band, to be expended under the direction of Lieut. Lomia.

A recess of the Board was had until

8½ O'CLOCK A.M., *June 23, 1880.*

Board met: Present, all the members except S. H. Ellis.

On motion, it was

*Ordered*, That in pursuance of section 8433, Revised Statutes of Ohio, the treasurer be and is hereby instructed to certify into the Treasury of State, to be placed to the credit of the irreducible fund of the University, twelve thousand and seventy-three dollars and twenty-eight cents, (\$12,073.28) being the net proceeds derived from the sale of the Virginia Military Lands, as shown by his statement of said account, November 15, 1879, page 85 of the ninth annual report of the Ohio State University.

Professor McFarland was directed to purchase an equatorial telescope for his department at a cost not to exceed \$450.00.

On motion of Mr. Godfrey, it was

*Resolved*, That the west end of the field adjoining the college building on the east, and extending as far east as the bend in the fence, on the north side of the main drive, be made a part of the Campus, and be placed under the control of Prof. McFarland, as soon as the growing crop is removed.

After a full discussion of the present condition of the department of Free-hand and Mechanical Drawing, on motion of Mr. Godfrey, it was

*Resolved*, That the department of Free-hand and Mechanical Drawing be and is hereby abolished, and that in lieu thereof, there is hereby established the department of Art.

On motion, it was

*Resolved*, That the employment of Instructor or Instructors in this department be referred to the President of the Faculty, Secretary of the Board and resident members of the Executive Committee, to be reported for the future action of the Board of Trustees.

Mr. C. E. Thorne, Farm Manager, appeared before the Board, and presented verbal resignation of his position, to take effect April 1, 1880, unless his salary should be raised to \$1,000 per annum. The Secretary was instructed to notify Mr. Thorne that the Board declined to accede to his terms, and accepted his resignation to take effect April 1, 1880.

A recess by the Board was taken to attend, during the afternoon, the Commencement Exercises of the University. After which, upon re-assembling, consideration of the Farm Management was engaged in, and it was

*Resolved*, That Prof. Townshend be reinstated as Farm Superintendent, in connection with his duties as Professor of Agriculture.

On motion,

*Ordered*, That Albert Allen, Secretary of this Board, be allowed \$300 for extra services, for making a full and accurate record of the Virginia Military Lands belonging to the Ohio State University; and in payment of special service in connection with the collection of outstanding notes due from purchasers of certain portions of said lands to said University.

*Ordered*, That the Executive Committee be empowered to furnish such additional facilities for Laboratory work in the Chemical Department as the exigencies of the case seem to require, at the opening of the fall term of the University.

The Secretary was authorized to notify the Lyonsdale Coal Company, that any balance of coal not delivered under the contract with the University, would be accepted next winter, if they desired it.

A communication from the Janitor, concerning the extension of certain steam pipes into the Society rooms, and the laying of gas-pipes to the boiler and gas-house, were referred to the Secretary, with power to act.

Board adjourned, subject to call of the President.

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COLUMBUS, OHIO, *August* 31, 1880.

Board met at call of President.

Present Messrs. Johnston, Jamison, S. H. Ellis, Godfrey, Miller and Anderson. •

Minutes read and approved.

Messrs. Johnston and Godfrey, to whom was referred the claim of F. N. Beebe, reported adverse to said claim, and it was ordered that action be brought against said Beebe on his note, now past due and unpaid.

By request, Prof. Thompson, of Perdue University, Indiana, read a paper relating to the proper organization of the Art Department.

Dr. Townshend read a report of his observations while visiting Agricultural Colleges in other States and in Canada, and submitted recommendations as to the management of the Agricultural Department in the Ohio State University.

A committee from the Horton Society was heard on an application for an appropriation of \$55, with which to buy chandeliers for the society hall.

*Ordered*, That two copies of the Ohio Farmer be ordered for the University and use of the Farm Committee.

Board took a recess until to-morrow, at 8 o'clock A. M.

WEDNESDAY, *September 1, 1880.*

Board met at 8 o'clock A. M. Present—Messrs. Johnston, S. H. Ellis, Jamison and Godfrey.

The Secretary presented the following sealed proposals for supplying from 500 to 800 tons of coal at the Ohio State University, in quantities as needed, during the collegiate year:

J. S. Doe & Co., per ton .....	\$2 35
T. Longstreth, " .....	2 50
M. A. Suydam, " .....	2 30
Laurel Hill Coal Company, per ton.....	2 55
Nelsonville Coal and Coke Company, per ton.....	2 40
Lyonsdale Coal Company, per ton .....	2 30

The proposal of the Lyonsdale Coal Co., at \$2.30 per ton of 2,000 pounds, was accepted, and the usual bonds required.

On motion of Mr. Godfrey, the Executive Committee was directed to expend for the Horton Literary Society an amount equal to that heretofore expended for the Alcyone Society. Passed.

On motion, C. E. Thorne was authorized to improve the sewerage from the University Building by additional basin, or in such other way as he thinks best.

On motion of Mr. Jamison, it was agreed that the members of this Board visit the Agricultural and Mechanical College, near Lansing, Michigan, to gather information for action at the regular meeting in November next.

The Board then heard Prof. Mason on plans for opening and conducting the Art Department.

Board adjourned at 7 o'clock P. M.

Board met at time appointed.

Present—Messrs. Johnston, S. H. Ellis, Anderson, Jamison and Godfrey.

Mr. S. H. Ellis moved that the President of the Board, the Chairman of the Farm Committee, and President of the Faculty, be a committee to inquire for and report the name of a suitable man to fill the Chair of Horticulture and Botany.

The matter of providing the Janitor with a house was referred to the Executive Committee.

Mr. William A. Mason, Jr., was, on motion, duly elected to the position of Assistant Professor of the Art Department for the ensuing collegiate year, at a salary for the fall term at the rate of one thousand per

year, and after said fall term the salary to be fixed by the Board as they may decide best.

On motion, the Executive Committee was authorized to equip the Art Department.

Adjourned to regular November meeting, unless sooner called together by the President of the Board.





ELEVENTH ANNUAL REPORT

OF THE

*BOARD OF TRUSTEES*

OF THE

THE STATE UNIVERSITY,

TO THE

GOVERNOR OF THE STATE OF OHIO.

FOR THE YEAR 1881.

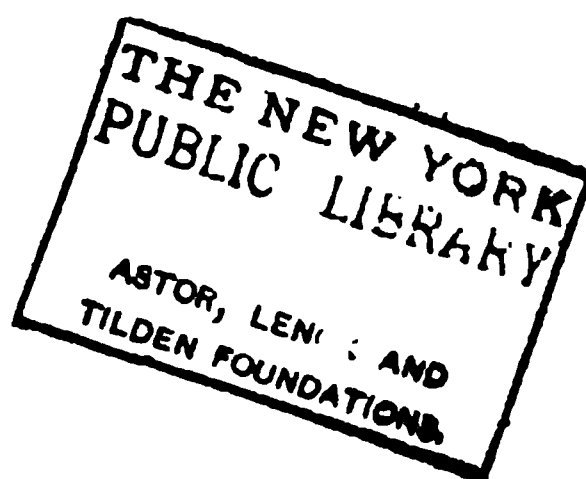


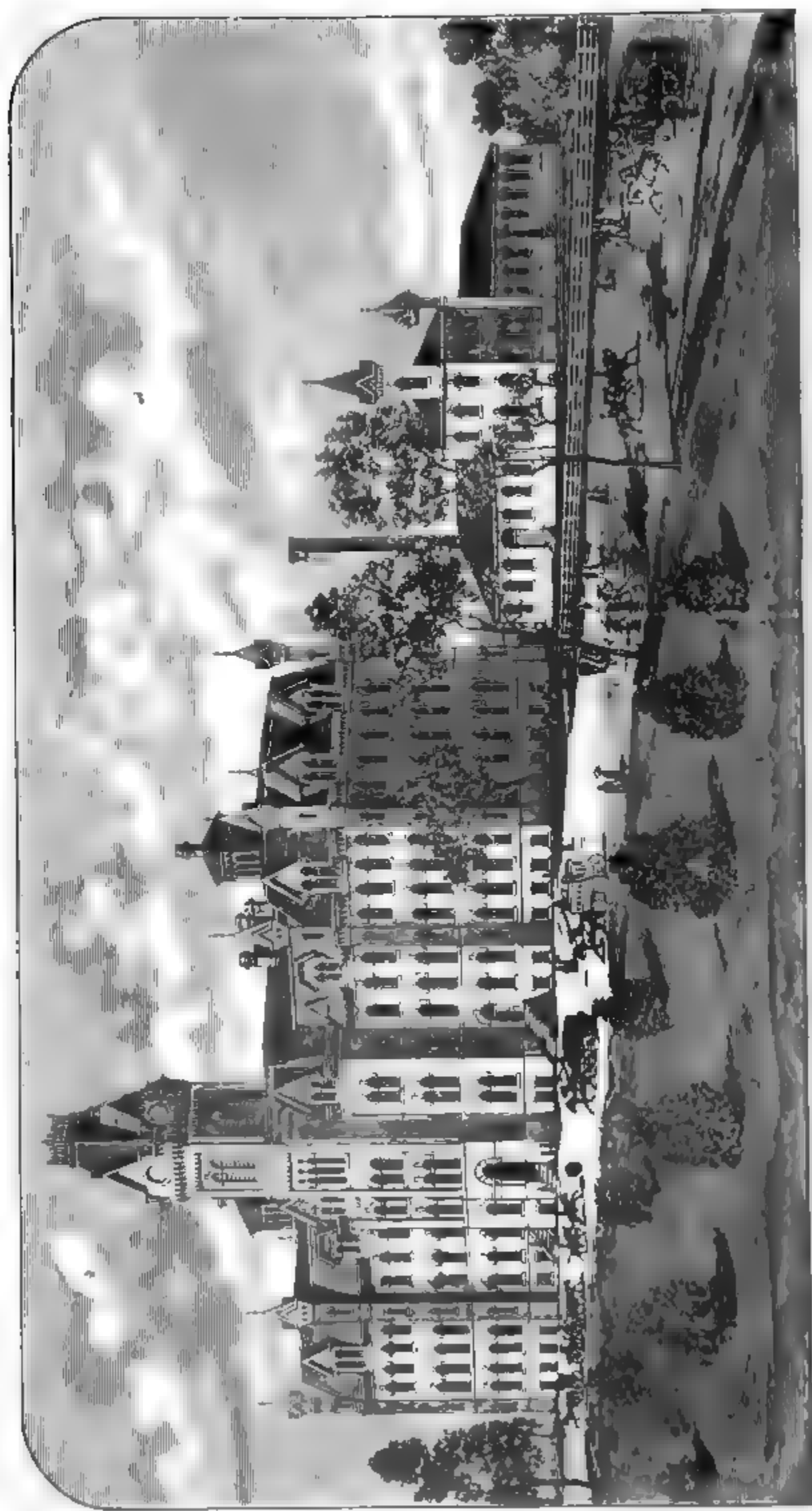
COLUMBUS.

G. B. FROST & CO., STATE PRINTERS.

1882.







OHIO STATE UNIVERSITY.

# ELEVENTH ANNUAL REPORT

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TO THE

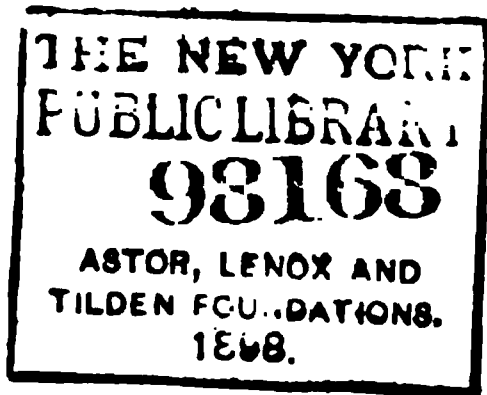
Governor of the State of Ohio,

FOR THE YEAR 1881.

COLUMBUS :

G. J. BRAND & CO., STATE PRINTERS.

1882.



BOARD OF TRUSTEES.

HON. T. J. GODFREY.....	Celina, Ohio.
ALSTON ELLIS.....	Sandusky, Ohio.
T. EWING MILLER.....	Columbus, Ohio.
HON. J. H. ANDERSON.....	Columbus, Ohio.
HON. JAMES B. JAMISON.....	Cadiz, Ohio.
S. H. ELLIS .....	Springboro, Ohio.
L. B. WING.....	Newark, Ohio.

OFFICERS OF THE BOARD :

JAMES B. JAMISON.....	<i>President.</i>
ALBERT ALLEN.....	<i>Secretary.</i>
HENRY S. BABBITT.....	<i>Treasurer.</i>

EXECUTIVE COMMITTEE :

J. H. ANDERSON,      L. B. WING,      T. J. GODFREY.

FARM COMMITTEE :

L. B. WING,      S. H. ELLIS,      JAMES B. JAMISON.

FINANCE COMMITTEE :

T. J. GODFREY,      S. H. ELLIS,      ALSTON ELLIS.



# OHIO STATE UNIVERSITY.

1881-1882.

## FACULTY.

**REV. WALTER Q. SCOTT, A. M.,**

President and Professor of Philosophy and Political Economy.

**EDWARD ORTON, Ph. D., LL. D.,**

Professor of Geology.

**SIDNEY A. NORTON, Ph. D., LL. D.,**

Professor of General and Applied Chemistry.

**NORTON S. TOWNSHEND, M. D.,**

Professor of Agriculture and Veterinary Science.

**R. W. McFARLAND, A. M.,**

Professor of Mathematics and Civil Engineering.

**ALBERT H. TUTTLE, M. Sc.,**

Professor of Zoology and Comparative Anatomy.

**S. W. ROBINSON, C. E.,**

Professor of Mechanics.

**T. C. MENDENHALL, Ph. D.,**

Professor of Physics.

**NAT. W. LORD, E. M.,**

Professor of Mining and Metallurgy.

**JOHN T. SHORT, Ph. D.,**

Professor of History and the English Language and Literature.

**S. C. DERBY, A. M.,**

Professor of the Latin and Greek Languages.

**WILLIAM R. LAZENBY, Ag. B.,**

Professor of Horticulture and Botany.

**GEORGE RUHLEN.**

First Lieut. 17th Infantry, U. S. A., Professor of Military Science and Tactics, and Assistant Professor of Mathematics.

**WILLIAM A. MASON, JR.,**

Assistant Professor of Industrial Art.

**ALICE WILLIAMS.**

Instructor in the French and German Languages.

**S. C. DERBY, A. M.,**

Librarian.

**BELLE SWICKARD.**

Assistant Librarian

COLUMBUS, OHIO, *November* 15, 1881.

*To His Excellency, Governor Charles Foster :*

SIR : I have the honor to transmit herewith the Eleventh Annual Report of the Board of Trustees of the Ohio State University, showing the condition and progress of the University.

Very respectfully,

Your obedient servant,

ALBERT ALLEN,  
*Secretary of the Board.*



## REPORT OF TRUSTEES.

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*Governor Charles Foster :*

SIR: The Trustees of the Ohio State University present herewith, as the law directs, a report showing the condition and progress of the Institution for the current year. They take pleasure in stating to your Excellency that the University is enjoying a well-marked and steadily-increasing prosperity, and that its condition is, in all respects, satisfactory and more promising than at the date of any other report. Nothing has occurred to mar its good order. Its departments have been strengthened and enlarged by additions to its professional corps, and by increased facilities for object instruction and illustration. Its material condition, also, as relates to the preservation and improvement of its buildings, inclosures, and farm appurtenances, is quite satisfactory. The number of students is much larger than heretofore, and its class and lecture-rooms are rapidly reaching the limits of their capacity.

The Board, in making this general announcement, would not have it understood that the University had reached its highest possible position, but rather that this increased prosperity should commend it to the more favorable attention of the State in its relations thereto. Upon the general demand of the people of the State, as was understood at the time, tuition fees were abolished early in the history of the college. While, therefore, an increase in the number of the students marks the growing service and usefulness of the University, it does not practically add anything to the Institution. On the contrary, by increasing the number of classes, and by more facilities for instruction, it actually adds to the burdens of the Institution. It is just here, in the judgment of the Trustees, where the State should lend its necessary aid. The endowment fund has been wisely husbanded, as all acknowledge. It has been so used as to attract, hold, and fit for useful positions, a valuable element of society from every section of the State. Now that it seems likely to call together more than it can properly serve, the State, in justice to herself, should supplement its capabilities by furnishing, at least, the necessary room for the education of its own children.

At the close of the collegiate year, June 20, 1878, Edward Orton, President of the University, offered his resignation. This action upon the part of President Orton was taken to relieve himself of the arduous responsibilities which the situation entailed, and to afford him more

time in the prosecution of his favorite pursuit, geology. In view of his ripe experience and able management through an honorable connection with the University from its beginning—his high scholarship and untiring zeal as an educator—the Board felt unwilling to part with his services, and his resignation was laid on the table for future consideration. His request, however, to be relieved has been renewed at the conclusion of each collegiate year since, and the Board felt impelled, by a deference to his wishes, to find a suitable successor. After investigating the fitness of several gentlemen of scholarly attainments and executive ability, the Board, at the regular meeting in June last, elected as President and Professor of Philosophy and Political Economy, Walter Q. Scott, of Easton, Pa., formerly of Ohio, a gentleman of rare intellectual endowments and culture, of unblemished character, and possessed of a general acquaintance with college government and educational wants. President Scott formally assumed the duties of his new position at the time of the last commencement.

The necessity of the ultimate separation of the subjects of Physics and Mechanics, which were formerly united, was obvious from the first, but, until the Institution had got into working order, it was thought best to have them associated. On Professor Mendenhall's withdrawal from the chair three years since to accept the Professorship of Physics in the Imperial University of Japan, Professor S. W. Robinson was called to the vacant Professorship. The special experience and acquirements of Professor Robinson led to a greater expansion and development of the mechanical division of the Professorship, and this was no sooner done than it became obvious to all that such broad subjects in an institution of the character of the Ohio State University, as Physics and Mechanics, could no longer be turned over to one man. Professor Mendenhall was accordingly invited, more than one year ago, to return to the University and assume the chair of Physics, while the department of Mechanics remains in charge of Professor Robinson. Professor Mendenhall is now at his post, and the Trustees believe that no change made by them during their administration will better serve all the interests concerned than this one. It has added great efficiency to both departments, and helps to maintain them, as they always should be, separate and central in place and importance.

The withdrawal by resignation of Prof. Joseph Milliken, so long and honorably connected with the University, as Professor of English Language and Literature, was rendered imperative, at the close of the last session, by reason of continued ill-health. The assignment of his work to other members of the faculty, whose departments are most

nearly related in scope, and which was rendered possible by the recent change in the presidency, guarantees the same high standard of excellence with which it has been heretofore marked.

With a view to the attainment of still greater proficiency in the Latin and Greek Languages, Professor Josiah R. Smith resigned his position to prosecute his studies in the Universities of Germany. The vacancy so occasioned has been filled by the appointment of Prof. S. C. Derby, late President of Antioch College, Ohio. Prof. Derby brings to this chair thorough scholarship, and a large experience in teaching.

From many considerations, independent of the chief design of Congress in making the land grant, it has been deemed essential to give the greatest prominence to instruction in scientific Agriculture and Horticulture. As the basis of all animal life, as the prime source of national wealth, and as an individual pursuit, the most healthful, independent, and attractive, Agriculture and Horticulture must always stand at the very *head* of all human industries. Every investigation tending to unfold for us the hidden forces of nature, and the laws of their operation, and the employment of artificial means, subsidiary to the highest productiveness, should receive the most careful attention. The isolation of the farmer—the engrossing nature of his labors—and his lack of proper facilities for conducting safe and reliable experimentation—clearly preclude his engaging in this work. It can only be done by the skilled Professor, whose *time*, *education*, and *facilities* can be commanded in the field, the forest and laboratory.

Under such convictions, and urged by the demand of many citizens and Agricultural and Horticultural Associations throughout the State, the board thought proper, in addition to the chair of Agriculture now held by Dr. Townshend, to create a new chair of Horticulture and Botany.

W. R. Lazenby, B. S., of Cornell University, whose scientific and *practical* information in relation to these subjects is well attested, has been called to this chair, and has entered with great energy upon the duties of this new and promising field.

In order to meet the requirements of this new department, a considerable outlay in the way of equipment will be required, and the board feels confident that it can appeal successfully to the Legislature for aid in this most practical and important direction. It also hopes for the cordial endorsement of your Excellency, in its proposed application, to the Legislature.

The long and successful administration of the Military Department of the University, by Lieutenant Luigi Lomia, having terminated by the expiration of the time for which he was detailed by the Secretary of

War, it became necessary for the board to make application for a successor. A considerable number of officers, with honorable record and strong credentials, made application to the board that their names be forwarded to the Secretary of War for appointment. In finally selecting First Lieut. George Ruhlen, 17th Infantry U. S. Army, as the officer for whom their application should be made, the Trustees were assured of a firm and manly, but quiet and unobtrusive management of this somewhat difficult office. They take pleasure in saying that thus far their expectations have been fully met, and the department, in all its divisions seems to be in harmonious and successful operation.

Under the provision of an act of Congress, passed February 26, 1879, allowing the President of the United States, upon the application of an established scientific school or college within the United States, to detail an officer from the engineer corps of the navy, as professor in such school or college, application was made by the Board September 23, 1881, to President Arthur for such detail. Documents attesting the scientific character of the University, accompanied the application, which was presented by the Hon. Geo. L. Converse, member of Congress from the 12th District of Ohio. An acknowledgment of the application by the President was duly received, stating that it had been referred by him to the Secretary of the Navy, and the Board is confident that the appointment will be made at an early day.

With the exceptions and additions just stated, the former corps of instructors remain intact. In the departments, however, of Mining and Metallurgy, Latin and Greek, and History and English Literature, the former assistant professors have been elevated to the rank of *full* professors. The subjects themselves, and the character of the incumbents of these departments, alike demanded this action. It is now confidently believed that no similar University can boast of a faculty superior in all that constitutes excellence in the line of both liberal and practical education.

In addition to the annual reports of the Institution which are published, and in part distributed by the State, the Trustees have deemed it their duty to further make known the advantages and opportunities which the University offers, by judicious newspaper advertising to a small extent, and by the distribution of circulars. These, during the summer vacation, have been largely scattered over the State.

The course of lectures, for farmers, on agricultural topics, was quite largely attended last winter, and every evidence of its high appreciation was received. Its continuance seems a fixed fact. While it imposes quite a burden on those members of the Faculty who are made responsi-

ble in conducting it, they are glad of an opportunity to thus popularize their several subjects and to establish closer connections between the farming community and the University.

The Board also made provision by which the University could be represented in the Farmers' Institutes, lately established under the auspices of the State Agricultural Society. Prof. Townshend was thus enabled to take part in a considerable number of these meetings, to the great satisfaction of the farmers assembled; and now already his services and those of Prof. Lazenby are being sought for in these Institutes during the coming season.

The main dormitory is still occupied by the University Club, numbering over fifty members, of orderly and good behavior. This use of the building happily serves to secure to those desiring the lowest possible rates, good board, good rooms and good care. The building was never as well kept as it is now: all unnecessary injury being promptly assessed by the club against the offending party. A good part of its successful management is due to the fortunate selection of the family in control of the house. The south dormitory is kept constantly full. It enables young men wishing to board themselves, to reduce their expenses to a minimum amount, and happily makes very full returns to the college.

During the last year an adequate and satisfactory water supply for the main building has been, for the first time, secured. The supply has been, heretofore, taken from cisterns and wells, and has proven so uncertain and precarious, as to subject the building to great inconvenience occasionally, and even to positive danger. Now, by the erection of a wind-mill, the strong spring to the south of the college has been utilized, and an abundant supply of good water is carried to the tanks and cisterns, at an expense not exceeding the interest on the original small investment. The work was planned and carried out by the professors of engineering in the college, Messrs. McFarland and Robinson.

The appropriation of \$1,000, made by the Legislature in 1879-80, for cases in the Geological Museum, has been used during the last year, to the great advantage of the collection, as regards both its preservation and display. The material collected at such expense by the State Geological Survey is now made available for public instruction and service.

An appropriation of \$1,000 for "ordinary repairs" was made by the last General Assembly. Advantage was taken of the summer vacation to paint the outside of all windows and doors, and the wood-work belonging to the roof finish, both of the college building and dormitory. The



bare exposure of the wood rendered these liable to rapid decay, and hence immediate attention was imperative. The more public portions of a part of the interior of the college, such as the halls and lecture-rooms, which were defaced, have been painted and kalsomined. Other essential repairs should be made, the cost of which can hardly be covered by this appropriation. Further provision should be made.

From the sale of Virginia Military lands to November 15, 1880, as shown by the Treasurer's report, the net proceeds were \$17,134.71. Of this amount \$12,073.28 was paid into the State Treasury to the credit of the Endowment Fund of the University, as provided by law. The net balance of \$5,061.43 has been further increased during the last fiscal year by the addition, in gross, of \$6,815.46. Of this latter sum \$3,251.61 was derived from cash sales made during the year, and \$3,563.85 from the collection of notes.

Charles A. Barton, of Portsmouth, Ohio, who was continued as Agent of the Board during the last year, has given much of his time to the details of making sales, discovering new lands, collecting notes, and recovering lands previously sold, the title to which had been forfeited by failure to comply with contracts of sale. There now remains unsold, principally in the counties of Adams and Pike, about 1,400 acres in small tracts, and as no new discoveries, to any great extent, seems probable, the fund to be derived from this source for the future will mainly depend on the collection of notes now held by the Treasurer.

The long standing claim of W. H. Leete, for services in connection with the Virginia Military Lands, under a former Board, has been, under the advice of the present Attorney-General, Geo. K. Nash, settled by the payment of \$2,284.33 from the proceeds of the sale of these lands.

The question of building residences on the College lands, for the use of the Faculty, has frequently engaged the attention of the Trustees. In many obvious respects it would be most desirable to have the Professors located *near* the University. It has also been demonstrated by the rental received from the buildings already so located and occupied, that such additional residences would pay on the cost of their construction a rate of interest at least equal to that paid by the State on the general Endowment Fund. The use then of any interest-bearing funds belonging to the University for such building purpose, would not diminish the annual resources of the College. No portion, however, of the Endowment Fund or interest arising therefrom, can be so employed. The act, however, vesting the title of the Virginia Military lands ceded to Ohio by the act of Congress, in the Trustees of the Ohio State University, does not impose such prohibition. If the Legislature should, there-

fore, in their wisdom see proper to appropriate the proceeds of sales of these lands to this object, there would be nothing to prevent their so doing. Besides the amount heretofore certified into the Treasury under the requirements of the 6th section of an act passed April 3, 1873, by the General Assembly of Ohio, the report of the Treasurer will show that there remains in his hands the sum of \$8,433.35. This sum, together with the amounts likely still to arise from sales and collections of notes, might be profitably and wisely invested in the manner indicated, and also *relieve* the State from the payment of interest on a fund not needed in its financial operations. No interest of the University could suffer by such an investment, while many of her more important ones would be greatly subserved.

As was suggested in the former portions of this report, there are certain directions in which the needs of the Institution are *urgent*, and for which *State aid* is earnestly called. The first of these is a want of room, which can only be met by the construction of one or more new buildings for the use of certain departments of the Institution. A chemical hall, with which also the mining and metallurgy could be associated, seems, on the whole, to be the most pressing want. This need not be an expensive structure; but for \$20,000 a building could be erected that would provide ample room and the very best facilities for carrying on these important departments. The removal of two departments from the main building would release enough room there for some time to come. Unless some such provision is made the University will soon be obliged to close its doors against many applicants for admission—a result to be deprecated, and a State reproach.

The department of Botany and Horticulture needs also be provided for. Perhaps, as before indicated, no department of the University will be found more practical and directly serviceable to the State than this; and it is to be hoped that it will not be left hampered and undeveloped by the lack of the few thousands of dollars needed for its proper equipment.

For the fuller details connected with the condition, management, progress and wants of the University, your Excellency is respectfully referred to the appended special reports of the President and Faculty, the Treasurer, Farm Superintendent, and the minutes of the Board proceedings.

Respectfully, &c.,

ALBERT ALLEN,  
*Secretary of Board.*

## REPORT OF THE PRESIDENT.

MR. T. EWING MILLER,

*President of the Board of Trustees of Ohio State University:*

DEAR SIR: I have the honor to present herewith the annual report of the Faculty for the year ending November 15th, 1881.

Inasmuch as only a few weeks have elapsed since I entered upon the duties of this office, the present report covers the transactions of the last year of the administration of my honored predecessor. The fact that the annual report is required at the close of the fiscal year of the University instead of at the close of the academic year, when the change of administration occurred, makes it my duty to present the official report of proceedings, whereof the responsibility and credit belong to the past administration. Indeed, circumstances incidental to the change of administration, have allowed me to devote only a short time to the consideration of details in the management of the University, and I therefore refrain from judgment upon any, except certain questions usually involved in an annual report of the Faculty.

But I may be permitted to express my great indebtedness to the hearty help of my colleagues in taking up executive work, and especially to the very thoughtful kindness of my esteemed predecessor, Professor Orton, who has done everything possible, both for the University and for his successor since he persuaded you to accept his resignation of the presidency in June last. The favorable opening of the present year is largely due to his efficient labor and care. The Institution is to be congratulated, not only upon securing the entire time of such a professor in the department of Geology, but also upon the fact that his experience as executive shall be constantly available in the councils of the Faculty.

The number of applicants for admission to the classes of the University at the opening of the present year was larger than at the opening of any previous year.

A general idea of the growth of the University may be obtained from the following summary:

In November, 1873, there were 27 students, from 10 counties.

"	1874,	"	59	"	22	"
"	1875,	"	99	"	39	"
"	1876,	"	120	"	42	"
"	1877,	"	211	"	50	"
"	1878,	"	198	"	52	"
"	1879,	"	195	"	56	"
"	1880,	"	235	"	61	"
"	1881,	"	280	"	56	"

This last number, 280, includes those only that have been actually admitted and have paid their college dues.

A number of candidates were rejected, and while the standard was certainly not lowered, it cannot be said that the entrance examinations were in any case unreasonably severe.

The University desires to establish these departments of higher education upon such foundations as will afford the greatest advantages to the system of public schools, but it should be borne in mind by all concerned that it would be a gross perversion of the endowment of the State University to use any part of it in teaching what the State has already abundantly provided for in the common schools and high schools.

Our preparatory course of two years makes ample provision for all such candidates for collegiate classes as may have need to obtain preliminary training here rather than elsewhere.

I have not had the requisite opportunities of observing the working order of the students as distributed through the several departments during the past year, and therefore refrain from any generalizations based upon the statistical paragraphs in the professorial reports. These reports are, however, sufficiently clear in specifying the number of students engaged in the different studies of the curriculum. It will be observed that the distribution is, in general, wisely made, notwithstanding the large liberty of election enjoyed by the students. But it is also to be observed that the measures taken to fix the regular courses have been successfully forwarded without hindering the rightful privileges of choice afforded to those that may need or can pursue only special studies.

In this connection it is important to note that the present year opens with ampler provisions made by your honorable body for several departments of the University. I refer to them only in connection with the internal organization of the faculty.

You have established the department of Physics as a separate

department under Professor Mendenhall, and the department of Mechanics under Professor Robinson.

The appropriation made by the State for the department of Mechanics enabled you to accomplish this end, and it is doubtful if such a sum of money could have been used in any way to produce larger and better results in scientific education.

You have made provision for a thorough course in the English Language and Literature, and have established the chair of Philosophy and Political Economy. It has fallen to my hands to assist in the formation of the course in English, especially in that part which properly covers the Junior and Senior years. It is our attempt to give the most thorough training in the English language as a classic. To this end the critical study of Anglo-Saxon is taken up at the beginning of the Junior year when the preliminary training, not only in English, but also in the ancient and in the modern languages, can be directly applied to the work of mastering classic English with reference both to literature as a fine art and to the practical literatures of science and philosophy. The study of Anglo-Saxon is followed during two years by a critical study of the best English authors, according to the plan that will be found in the catalogue.

In regard to the chair of Philosophy and Political Economy, it constitutes an important part of your provision for the study of sciences concerning *Man* : which are last but not least in any complete course of education for the young. One hour daily, for two years, I hope to devote to the course in Philosophy and Political Economy. It will begin with the Junior year; two terms of which will be given to Psychology and one term to the History of Philosophy (Intellectual). Then Ethics will occupy the first term of the Senior year, Logic the second term, and Metaphysics (Intuition), with Political Economy the third term.

At the present time fifteen students are engaged in the studies of this department—seven in the junior class and eight in the senior.

You have also established the department of Horticulture and Botany. I beg leave to call particular attention to the accompanying report of Professor Lazenby. This department can be made very valuable to the State by an efficient equipment, which can be provided at a moderate expense.

The Agricultural interests of Ohio are certainly of prime importance, and a well-equipped department of Horticulture and Botany would go far toward completing the work which the State University ought to do in behalf of Agriculture. I need not urge upon your intelligence the

obvious fact that a suitable building, with necessary appliances, is indispensable even to the beginning of good work in this department. I cordially endorse the general aim of Professor Lazenby's report, and trust that the need will be supplied.

By reference to the report of Professor Townshend, it will be seen that the course of "Lectures to Farmers", delivered in January of the present year, was a marked success. Arrangements have already been made by which the faculty will present, if possible, a still better course in January next.

One hundred and sixty-four farmers attended the last course, who represented nearly half of the counties in the State. It is hoped that the advantages of these free lectures will be sought by a still larger number in January, 1882.

As to military drill, it gives me pleasure to report that the large number of new students have readily united with the old, and form a fine battalion. Comparatively few have sought to be permanently excused, and there appears to be a growing disposition to obtain the advantages of this valuable training. A physician's certificate of disability, and the want of means to purchase the uniform, are the principal grounds of excuse from drill. To require the able-bodied students to spend during the first two years, three quarters of an hour at noon in these admirable exercises, is in many ways a great gain to their manliness and to their scholastic training. In the natural growth of the organization of the University this military training will combine with the discipline of classes to produce an *esprit du corps* every way desirable, both for good government and for highest education.

The dormitories are in good condition, and at present all the available rooms are occupied. The demand for dormitory accommodations is greater than the supply, and an increasing number of students are compelled to seek rooms and boarding in private families.

In regard to the wants of the University, I have already emphasized the need of a building suitably equipped for the department of Horticulture and Botany.

But the obvious need of a legislative appropriation for this purpose does not diminish another great need which comes in fact from all the departments as the result of their growth. I feel, therefore, constrained to renew and urge the recommendation of President Orton in the report of last year in regard to a separate building for laboratories. The main building is now so crowded that the question of room is a serious problem. Already efficient work is hindered, not only in the laboratories,

but in at least seven other departments. While it may be fairly claimed that the University at present supplies the most varied and most thorough practical training in science to be had in the State, there can be no question of the great gain that would result if a separate building should be erected for laboratories.

I refrain from indications of plans or estimates, inasmuch as my brief experience of the working order of the institution does not enable me to speak wisely respecting details. But the report of Prof. Norton deserves careful attention in this direction, and doubtless the Board, together with the heads of departments, could select from several good plans one that would require a very moderate appropriation by which large practical benefits could at once be reached. The benefits of greatly augmenting the efficiency of work in the laboratories would certainly be equaled by the benefits of opening rooms in the main building for all other departments.

In this connection it is important to observe that the growing favor bestowed upon the University by the people of the State is increasing the number of students year by year, until now the pressure for room threatens to become a serious difficulty unless larger accommodations shall be provided. And it should be noted that this University, unlike most colleges, derives no income from tuition, and therefore the increase in the number of students really makes up additional burdens of expense, and constitutes an important claim for enlarged equipment resting upon the pledged faith of the State.

Concerning lesser wants within the ordinary appropriations made by the Board, I recommend that immediate provision be made to assist Prof. Derby in the instruction of the preparatory classes in Latin. One of these classes contains fifty-four members, and it is not possible for any teacher to do good work in Latin with so large a class of beginners. Prof. Orton has kindly added to his work the teaching of the Latin class in the second preparatory year, and it has appeared to be impossible to make any better distribution of work, all hands being full. And it would be an obvious gain if Prof. Orton could be relieved of this class in Latin.

I also recommend that some additional desks, with necessary appliances, be provided for the department of Zoology and Comparative Anatomy. At a trifling cost Prof. Tuttle's lecture-room can be fitted with shutters so as to admit the use of the lantern in lecturing. This ought to be done.

Prof. Lord is preparing slides at his own expense for illustrating

lectures on Metallurgy. His room should likewise be provided with shutters.

The requests for books for the Library, coming from the several departments, are reasonable, and I trust that the Board may be able to increase this most valuable apparatus.

I shall hand to you a memorandum of other wants worthy of your attention.

I have the honor to remain,

Very respectfully, yours,

WALTER Q. SCOTT.

*Ohio State University, November 15, 1881.*



# DEPARTMENT REPORTS.

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## DEPARTMENT OF GEOLOGY.

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*President Walter Q. Scott:*

DEAR SIR: I present, herewith, the annual report of the department of Geology and of my own professional work, covering the calendar year ending November 15, 1881.

The work of the department is divided into two quite distinct branches, viz.: (1) instruction in the subjects included in it, and (2) the care of the museum attached to it. To these must also be added certain class-instruction outside of my department, that I have felt obliged to undertake in meeting the urgent needs of the institution. I will treat of these divisions of my work in the order indicated above.

1. The subjects of General Geology and Physical Geography now form part of the general and special courses leading to the various degrees of the College. The subject of General Geology occupies two terms in the Junior year of all the courses. These two terms are followed in the Engineering Courses by a third term, in which the subject of Economic Geology is taken up, including the Theory of Veins and the distribution of Metalliferous Deposits. The class in General Geology for the first two terms of the current year numbered thirty-one. The class of the present term numbers ten. The class in Economic Geology for the Spring term numbered three members.

The instruction in General Geology is given in part by lectures, and in part by text-book work. For the latter, Leconte's "Elements of Geology" is at present used. The subjects of Lithology and of Historical Geology are treated in lectures exclusively, and lectures are also introduced to supplement the other divisions of the subject. A little field-work is added to the other modes of giving instruction, but the demands of the various departments upon our students, and of other professorial work upon myself, render it impracticable to get enough consecutive time to undertake the various interesting geological problems that are within our reach. I am hoping to find a way by which some more extended work can be accomplished in this line. The scope of instruction in Paleontology, also, is quite limited, but enough is done to introduce the student to the methods of study and the general laws of this division of Geology.

The subject of Economic Geology is treated exclusively by lectures.

Physical Geography is now placed in the first term of the first year of the Preparatory Course. As a consequence, the classes in it are among the largest of the institution, and they are also, of necessity, the crudest. The work done is not quite as effective as when the study was reached at a later point in the course, but to some department must come the work of preparatory training, and perhaps this subject is as well fitted for an introductory one as any of the scientific studies that form a part

of the course. The bulk of the instruction is given by text-book, but a few lectures are interspersed with the recitations, which are made not only to extend the knowledge of the student beyond the text, but which also serve to acquaint him with a new method of gaining knowledge.

The class in Physical Geography of last year (1880), numbered sixty-eight; the entering class of the present term is as large as the preceding class, but by an arrangement with the Professor of History, who also gives instruction in the first year course, it has been divided into two sections, one taking up Physical Geography and the other United States History for the present term. Next term, the sections will change their work. The arrangement enables each Professor to teach both sections of his class, which would be scarcely possible if both sections pursued the subject in the same term. My section in Physical Geography for the fall term numbers thirty-two.

2. The Geological Museum is an important adjunct to the Department of Geology in the way of instruction, and it also constitutes one of the attractions of the University for the general public. A great improvement has been made in it during the last year by the re-arrangement of the specimens in the new cases, provided by a recent appropriation of the Legislature. The cases themselves leave little to be desired, so far as general service and adaptation to their work are concerned. For the plans and drawings used in their construction, even down to the minutest detail, I am indebted to Mr. Franklin C. Hill, the accomplished curator of the Geological Museum of the College of New Jersey, at Princeton, who has made a special study of this subject, and who has succeeded in combining the advantages of several excellent museum cases. The work of building the cases was executed with great fidelity and success by the Columbus Cabinet Company, of this city. A much better arrangement of the specimens has been secured than ever before, but there is still a large amount of good material that has not been properly provided for, and, in the case of the specimens that are displayed, there is a large amount of work to be done. In fact, the Museum demands a much greater amount of time than it has ever been possible to give to it. All such collections require the constant service of a curator, if they are to be maintained in a creditable condition, and above all if any adequate provision for their increase and expansion is to be considered. The appointment of separate a college officer for this work is not possible at present, and the duties must remain as heretofore in the hands of the professor, but it is only proper, in my judgment, that the curatorship shall be recognized as a constituent part of the duties of the department, for which adequate provision shall be made in the assignment of the time of the professor.

The cabinet has been increased during the year by a number of fine specimens of fossils and minerals, a few of which were purchased with the small appropriations made by the Board for this purpose, but the most of which were sent in as gifts by friends of the Institution. Among the donors I will mention: Hon. Andrew Roy, State Inspector of Mines; J. J. Janney, Columbus; Thomas Kelly, Special Agent of Tenth Census; Frederick W. Sperr, Special Agent of Tenth Census; C. C. Green, Middleport, O. The large geological map of the United States, recently issued by Professor C. H. Hitchcock, has also been added to the equipment of the department, and it proves very effective and useful.

3. Under the last head there remains to be reported four terms of work, in

classes outside of my own department, which I have felt constrained to take on account of the urgent needs of the Institution. These classes take time and force that my own department ought to have, and for the want of which it suffers to some extent. I shall be very glad when such provision can be made for these subjects as will exempt me from service "in foreign parts." The four classes named above number eighty-nine members in the aggregate. The subjects taught were in the departments of Latin and History, subjects in which the number or the size of the classes has required more service than the professors in these departments could possibly render.

The statements now made cover my professorial work for the year. The department has many wants, but I will call attention to but a single one, and that is the need of additional cases for the Geological Museum. The Legislature, two years ago, recognized the claims that were urged by us that the State should provide for the care and preservation of the materials which it had accumulated through the agency of the Geological Survey, and which it had committed to our keeping, and accordingly an appropriation of \$1,000 was made for cases. This money has been used to great advantage, as has been already shown, but the amount was entirely below our estimates, and consequently it leaves the work but partly done. The appropriation should be supplemented by another of equal amount, and with this we could at least give safe-keeping to the valuable material that has been turned over to us.

Very respectfully yours,

EDWARD ORTON.

*Ohio State University, Nov. 9, 1881.*

## CHEMISTRY.

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*Rev. Walter Q. Scott, President Ohio State University:*

DEAR SIR: I have the honor to present this, my Ninth Annual Report of the Chemical Department.

The class in general chemistry began the year with fifty-two students. Its recitations continued for two whole terms and a part of the third. Of these students thirty-seven continued in the class throughout the year. The present class, which began at the opening of the fall term, numbered at the outset fifty-two.

Of these, eight have already left the college for various reasons, many apparently not knowing their own mind when they enrolled their names.

The number enrolled in the laboratory during the past year was twenty-six. There are now enrolled twenty-two. The apparent falling off in numbers is due to the more rigid classification of our students, which has been adopted in place of a larger choice in elective studies. I believe the change to be a wise one, but I suggest that a course of study be arranged for the degree of analytical chemist. I am of the opinion that it might attract students who are looking to future work in iron works and other establishments requiring chemical knowledge. A few eastern colleges have arranged for such special course. It would be possible, with the resources of the University, to make such a course as extensive and thorough as can be required.

I am persuaded that it is for the welfare of the University to offer as many special courses as our facilities for instruction warrant. They may be regarded as so many different apprenticeships for future work of some sort, and will tend to prepare such students to make headway in the coming struggle of life. It is out of place here to estimate the so-called educational value of such special, and thereby one-sided courses. It may be granted that they do not fall into any theory of educational training; but such specialties are needed. We should do our part to equip them as well as may be profitable.

Our appliances for instruction in chemistry are increasing yearly. The most important recent addition has come from the opening of the large unused shaft of the west wing. By this has been secured a most admirable series of steam baths, and it is hoped a marked improvement in ventilation. The lecture-room in general chemistry can not easily be lighted nor ventilated. I most earnestly renew my suggestion for a new building. It might be so made as to include all the laboratories doing work in analytical chemistry, and also those which the University is likely to require in future. It is estimated that from \$12,000 to \$15,000 would be sufficient. Of course this is not on the basis of the highly endowed laboratories of Harvard or Princeton; but I should be content with unplastered walls, if only the conveniences for work were abundantly furnished. I hope that this matter will receive favorable attention from the Board.

I ask that \$80.00 be appropriated for books in the department—specially to buy Fresenius's *Zeitschrift* for analytical chemistry—and a few recent publications.

As soon as the funds devoted to books warrant, we should buy Liebig's *Annalen* ( \$400.00 ), and other chemical journals. We have now a current subscription to the *Journal of the Chemical Society* : the back numbers should be purchased. I desire this *Journal* continued, and would also like the others mentioned above, in all, three, viz. : *Journal of the Chemical Society*, London ; Liebig's *Annalen* ; Fresenius's *Zeitschrift für Analytische Chemie*.

The work done during the past year will compare favorably with that of former years. We had, in fact, a much larger proportion of advanced chemical students than has been usual. This year we have but six second-year students.

As the laboratory is conducted, it is the least expensive to students that I know of anywhere. The entire expense for a whole year need not exceed forty dollars. Only one other institution in the State has any pretensions for doing work in chemistry as extensive and thorough as is contemplated in our plan of study. The methods employed in teaching the science of chemistry have been given in ample detail in former reports. It has not been found necessary to change the general plans, but, of course, the new discoveries find their proper place, and the attempt is made to keep abreast with the development of the science.—We do less in organic chemistry than I wish, but we do not retain our students long enough to do much in that branch of the science, and I regret to say that we have had few applicants.

Dr. Orton, in his last report, advised the appointment of an Assistant Professor in Agricultural Chemistry. I repeat his recommendation, and hope that favorable action may be taken upon it. If such an assistant should be appointed, he might be put in charge of all that relates to organic chemistry and be, in fact, "Professor of Organic Chemistry and of its relations to Agriculture." We have had, so far, but two students desiring agricultural chemistry, but I have no doubt that others would apply if special provision was made for them.

David O'Brine, B. S., continues his work as assistant in chemistry. He has had full charge of the laboratory accounts, and has rendered valuable service in caring for the details which are required for the laboratory. Very few realize how much labor is necessary to keep a large laboratory in efficient working order, and I take this opportunity to express my personal obligation to him for cheerful co-operation and faithful assistance.

Respectfully submitted.

SIDNEY A. NORTON.

*November 1, 1881.*

## DEPARTMENT OF AGRICULTURE.

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OHIO STATE UNIVERSITY, *November 1, 1881.*

*Rev. W. Q. Scott, A. M., President:*

DEAR SIR: I beg leave to make the following report of work done during the past year in the Department of Agriculture, including also Veterinary Science and Economic Botany.

The class in Agriculture numbered twelve, the class in Veterinary Science eleven, and the class in Economic Botany eight. In all of these classes satisfactory progress was made. At the present time Junior Agriculture has a class of seven, Senior Agriculture a class of five, and Veterinary Science a class of five. The students in Veterinary Science have enjoyed the advantages of a free Veterinary Clinic, held weekly, which has given them an opportunity of seeing many common forms of animal disease and of observing methods of examination and treatment.

The report of the Farm Superintendent will give in detail the results of experiments made upon the University Farm under my direction.

The third course of "Lectures to Farmers," given in January of the present year by professors of the University, proved a gratifying success. One hundred and sixty-four visitors were in attendance, representing nearly half the counties of the State. At the close of the lectures the desire was unanimously expressed for a similar course in 1882.

Very respectfully,

N. S. TOWNSHEND,  
*Professor of Agriculture.*

## DEPARTMENT OF MATHEMATICS AND CIVIL ENGINEERING.

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OHIO STATE UNIVERSITY, COLUMBUS, O., *November 1, 1881.*

*Walter Q. Scott, President :*

DEAR SIR: I have the honor to make the following report touching the work done in this department for the year closing October 31, 1881. The number of students in the several classes is given by sessions :

Fall Term, 1880 - Engineering, 6; Surveying, 19; Geometry, 24; Algebra, 84.

Winter Term, 1881 - Engineering, 9; Surveying, 17; Geometry, 49; Algebra, 89.

Spring term, 1881- Engineering, 9; Astronomy, 26; Trigonometry, 38.

Fall Term, 1881 - Engineering, 19; Surveying, 36; Geometry, 32; Analytical Geometry, 28; Algebra, 1st section, 56. Total, 541.

The work in all the studies has been, in general, satisfactory.

Field-work, for the classes in engineering, is carried on in the fall and spring terms, every day, when the weather permits. It consists in leveling, measuring heights and distances, surveying, setting out curves, cross-sectioning, mapping with the plane table; in fine, practicing in almost every variety of work pertaining to the business of the engineer.

In the winter session, when field-work is ordinarily impracticable, the classes are instructed in all kinds of drawing pertaining to engineers' work, viz.: platting, isometric, axonometric and topographic drawing; shades and shadows, and the general principles of perspective.

The telescope mentioned in my last annual report has been received from the manufacturers, Alvan Clark & Sons.

Very respectfully submitted.

R. W. MCFARLAND,  
*Prof. of Mathematics and Civil Engineering.*

DEPARTMENT OF ZOOLOGY AND COMPARATIVE ANATOMY.

*Rev. Walter Q. Scott, President :*

DEAR SIR: I have the honor to submit to you my eighth annual report.

During the year which has recently closed, the number of students in the various classes in my department was as follows :

Elementary Physiology .....	24
Comparative Anatomy.....	1
Advanced Physiology.....	8
<hr/>	
Making a total enrollment for the department of.....	33

The changes in the courses of study adopted by the Faculty two years ago, making the work of my department, during the year in question, lighter than usual in previous years or probable in those to come, I took temporary charge also of the First Preparatory English (55), which I have not, of course, counted in the enrollment of my department.

The enrollment for the current term is as follows:

Elementary Physiology .....	50
Advanced Physiology.....	12

I have, in addition charge, for this year, of one section of First Preparatory English, numbering twenty-six students.

No change was made last year in any of the text-books used in this department. I am using this year Huxley's Elementary Physiology in place of Cleland's, and have substituted Mivart's Anatomy, Frey's Histology, and Sanderson's Syllabus of Physiology, for the one large work by Foster, previously used by advanced students in Anatomy and Physiology. I shall also use Packard's Zoölogy during the second and third terms of the year.

I am glad to be able to report that some slight provision has at last been made for practical instruction in Advanced Physiology. The appropriation made by the Trustees one year ago, of four hundred dollars, provided desks for twelve students and apparatus and other appliances for such instruction in Chemical Physiology only for six. The result has been that this year every desk is taken, and several excellent students have been turned aside for want of more desk room. The increased attendance in this department makes an increase of the present stock of apparatus, absolutely necessary, and a further extension of the facilities of this department very desirable.

I must again urge our need of new skeletons of man and of the domestic animals. Seven years of constant use has reduced those now in our possession to a condition that is discreditable to the University.



I would be glad to have suitable provision made for the suitable exhibition of specimens, demonstrations, preparations, etc., on a properly constructed lecture-table, as well as for such appliances as will enable me to use my stereopticon and oxy-hydrogen microscope for the benefit of the large elementary classes.

An appropriation of fifteen hundred dollars would meet the various wants that I have indicated, and would, I am confident, be more than repaid in the resulting advancement of the welfare of the students in this department.

All of which is respectfully submitted.

*State University, Nov. 1, 1881.*

ALBERT H. TUTTLE,  
*Prof. Zoölogy and Comp. Anatomy.*

## DEPARTMENT OF MECHANICS.

OHIO STATE UNIVERSITY, *November 8, 1881.*

*President W. G. Scott:*

DEAR SIR: I respectfully present the following report of work in the Mechanical Department, during last year, and so far for the present term this year:

Students in the several branches of the fall term, last year, 1880: Analytical Mechanics, 6; passed, 4; Thermodynamics, 1; Mechanical Laboratory, 14; passed, 10.

Winter Term, 1881—Mechanism, 5; passed, 5; Strength of Materials, 2; passed, 2; Prime Movers, 1; Mechanics and Machinery, 1; Mechanical Laboratory, 17; passed, 14.

Spring Term, 1881—Mechanism, 4; passed, 4; Millwork, 1; Mechanical Laboratory, 14; passed, 9.

Fall Term, 1881—Analytical Mechanics, 3; Machine Drawing, 3; Mechanical Laboratory 14; Thermodynamics, 2.

A considerable need has been felt during the past year, and previously, for more standard books and works of reference in the library, treating upon subjects of the departments. The two libraries of the city are not always serviceable, for two reasons—first, the distance; second, the absence of needed books. A few of these needed books placed in our library would be a relief.

The practical operations of the Mechanical Laboratory have heretofore consisted mostly of exercises in the use of tools. This has been favored for two reasons—first, because this kind of instruction is needful; and second, because demanded by the greatest number. The laboratory should, however, be furnished with facilities for practical exercises of a higher order, such as a dynamometric brake applicable to our steam engine for measuring the power developed by it; an iron tank into which the engine can exhaust its steam for a time, to be condensed to determine the heat leaving the engine; a machine for testing lubricating oils; a machine for testing the strength and elasticity of materials by various methods of test; means for measuring the temperature of fire, smoke and steam. The present testing machine is well adapted only for direct tension and compression, for determining ultimate resistances, whereas the elastic resistance cannot be obtained by means furnished in our machine; but which is of importance even greater than the ultimate resistance, both for building purposes, and for instruction's sake. I believe it very desirable that the present testing machine be exchanged for another, supplying the desired conveniences. As soon as means can be allowed for securing the important instruction just indicated, I shall be glad to procure exact figures for the same. Three of the testing machines desired would cost in the neighborhood of \$300 each, the old testing machine being turned in besides as part pay for a new one in its place. These testing machines may be placed in the first story, corner room, of the Mechanical Laboratory building.

Some additional specimens have been added during the year to the Mechanical Cabinet; also, models of mechanical movements.

DEPARTMENT OF PHYSICS.

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During the fall of 1880, and the winter and spring of 1881, the Physical Laboratory was under my charge; also, the higher class in physics. The elements of physics were taught by an instructor.

The class in higher Physics during the Fall Term, 1880. Higher class, principles of Physics, 4; passed, 3: Physical Laboratory, 1.

Winter Term, 1881—Physical Laboratory, 4; passed, 3.

Spring Term, 1881—Physical Laboratory, 2; passed, 2.

Very respectfully, yours,

S. W. ROBINSON.

## DEPARTMENT OF MINING AND METALLURGY.

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*Rev. W. Q. Scott, President:*

DEAR SIR: I have the honor to present the following report on the work of the department of Mining and Metallurgy for the past year: During the year there were ten students in the advanced work of the department; one of those completing his course received the degree of Mining Engineer.

The Freshman class in Mineralogy numbered twenty-two, making the total number of students in the department thirty-two.

The present term opens with eight students in the advanced studies—Metallurgy and Assaying.

I have also the charge of one of the divisions of the first preparatory English class—twenty-seven students.

The work of the State Laboratory has been regularly carried on, and has been about the usual amount. During the summer a large number of fertilizers were analyzed for the State Board of Agriculture, and the results published in their reports.

It is hoped that during the present year time may be found for carrying on some metallurgical experiments which shall give the work of this department more general value still. The Metallurgical Laboratory needs to be protected by a wall drain, or some such means, from the dampness, which is at times a very serious annoyance and risk to those working there.

I would ask an appropriation of at least two hundred dollars for my department for the purchase of new minerals and specimens. We need, badly, a students' collection of minerals—specimens which can be handled and tested by the members of the class.

I am at present making arrangements for having made, at my own expense, a set of lantern slides illustrative of the lectures on Metallurgy. I therefore ask that the windows of my lecture-room be provided with dark shutters or curtains, that I may be able to use the lantern there.

Respectfully submitted.

N. W. LORD,  
*Professor of Mining and Metallurgy.*

DEPARTMENT OF HISTORY AND ENGLISH.

OHIO STATE UNIVERSITY, COLUMBUS, Nov. 7, 1881.

President Walter Q. Scott :

DEAR SIR: I have the honor to submit a report of the work in my department during the College year of 1880-1881. The class rolls for that period make the following exhibit:

*First Term.*

Advanced History .....	14
Psychology.....	6
Total.....	20

*Second Term.*

Advanced History.....	9
Philosophy.....	4
U. S. Elementary History .....	30
Total.....	43

*Third Term.*

Advanced U. S. Constitutional History.....	12
Ethics.....	8
General History .....	35
Total.....	55

Total class enumeration for the year.....	113
Section of U. S. Elementary History, taught in Winter term by Prof. Orton .....	22
Section of General History, taught in Spring term by Prof. Orton ...	30
Total of classes in History and Philosophy.....	165

Deducting thirty-three for students counted more than once, one hundred and thirty-two will remain as the net total of attendance upon the department for the year.

In addition to the above I taught a class of eighty in Abbott's "How to Write Clearly," once a week throughout the first and second terms, and nearly half as many during the third term. The division of the class, so necessary to its success, was made possible by Professor Lord taking a section of it in the Spring term.

In the advanced History the work was perceptibly furthered through the expenditure of a small appropriation made for my department. The few books thus obtained proved a decided stimulus to the habit of special research, which it is the aim

of the department to cultivate. Yet, I shall not attempt to conceal the truth that the highest success of the department is rendered impossible by the neglect to place within the reach of students a limited number of important works on History and Political Science.

The special European History taught in the first and second terms of the year, embraced a study of the institutional and constitutional growth of the leading Powers, from the fifth century until the present. The text of Hallam's *Middle Ages*, used in the first term, was supplemented by lectures on the languages, literature, learning, law, commerce, agriculture, condition of labor, and domestic life of the period; also, by a course on the English constitution. The text-book on Modern History was followed at the close of the winter term by a course of lectures on the "Condition and Policy of the Great Powers in 1880." Professor Mason contributed to the completeness of the work in each subject by illustrated lectures on the History of Architecture for both periods.

In the spring term, the Constitutional History and Civil Polity of the United States was taught by means of a course of lectures; and a system of references (1) to the original documents, and (2) to the leading expository and historical writers on the subject. One recitation hour per week, throughout the year, was devoted to the reading and criticism of theses in Historical and Political Science.

Allow me to allude, in this connection, to what is, doubtless, patent to all, that it is incumbent upon us, as a State institution, to give thorough and special instruction in the Constitutional History of both the General and the State governments, to as large a number of our students as possible. It is important that we prepare all who seek our tuition, in some degree for the duties of citizenship. Such training in a broad sense is provided and given to those who choose two out of seven of the courses laid down in our curriculum. May not a more general provision for the body of our students be made at an early day?

In Philosophy, the work of the first term, relating to presentative and representative knowledge was enlarged by a course of lectures on the "Relation of Mind and Body," illustrated in the light of physiological research. In addition to the text-book work of the second term, extended courses of lectures on the Emotions and Will, and on the history of Philosophy were given.

The third term was devoted to the principles and history of Ethics, taught both by the text-books and lectures.

With the present term I entered, in part, upon the duties incident to the re-adjustment of departments by which English was committed to me in place of Philosophy. In the practical outcarrying of the change I have had such hearty coöperation from yourself as calls for my grateful acknowledgments. My work in English for this term has been performed in connection with the Senior Rhetoric, a daily class of twenty-one, and a section of the Second Preparatory Composition and Rhetoric, a class, in weekly recitation, numbering thirty-eight students; another section of which is taught by Miss Williams.

It would be premature to present, in this connection, a prospectus of the work contemplated in English. Suffice it to say, that no effort will be spared for the realization of the most sanguine wishes entertained by yourself and the Trustees for the eminent success of the department. May not the augury of such realization be read

in the following transcript from my rolls, for the present term, made interesting by the size of the advanced classes ?

- 1. Junior (advanced) History..... 21
  - 2. Senior Rhetoric ..... 21
  - 3. United States Elementary History (1st section) ..... 23
  - 4. Second Preparatory Rhetoric and Composition (1st section, weekly)... 38
- Respectfully submitted.

JOHN T. SHORT,  
*Professor of History and English.*

## DEPARTMENT OF LATIN AND GREEK LANGUAGES.

OHIO STATE UNIVERSITY, COLUMBUS, O., November 1, 1881.

To President W. Q. Scott :

DEAR SIR: I respectfully submit the following report upon the Department of Latin and Greek, which has been under my charge since the beginning of the current academic year.

The number of students at present members of the various classes in Latin and Greek, is as follows :

Sophomore Latin .....	7
Freshman Latin .....	14
Second Preparatory Latin .....	25
First Preparatory Latin .....	54
	<hr/>
	100
Junior Greek.....	2
Sophomore Greek .....	9
Freshman Greek .....	7
	<hr/>
	18
	<hr/>
	118
Twice counted .....	7
	<hr/>
Net total .....	111
Net total corresponding term of 1880 .....	92
	<hr/>
Gain in number .....	19

The instruction of the Second Preparatory Class was kindly undertaken by Prof. Orton.

The classes in Junior Greek and Freshman Greek, entrusted respectively to Miss Belle Swickard and Mr. C. C. Miller, have been taught with a good degree of fidelity and success.

I have reserved for myself four classes, viz.: First Preparatory Latin, Freshman

Latin, Sophomore Latin and Sophomore Greek, each class having five recitations a week. In addition, I have assumed the instruction in Grammar of one section of the First Preparatory Class in English a weekly exercise.

I would press upon your attention and the consideration of the Board of Trustees the urgent need of dividing the First Preparatory Class in Latin into two sections, each of which, with our present number, will be as large as can be properly taught in one class, or be decently accommodated in any recitation room at the disposal of the department.

Very respectfully yours,

S. C. DERBY.



## DEPARTMENT OF BOTANY AND HORTICULTURE.

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*Walter Q. Scott, A. M., President Ohio State University:*

DEAR SIR: Scarcely more than six weeks have elapsed since I first assumed the duties of the department of which I now have charge, and this fact will explain why the present report is but little more than a prospectus.

Early in the term a committee of the Faculty was appointed to so arrange the studies of the agricultural course as to include more Botany and a year's work in Horticulture. After due consideration the following scheme of study was decided upon for this department:

### PREPARATORY COURSE.

Third Term—Structural and Systematic Botany.

### COLLEGE COURSE (*Second Year.*)

First Term—Economic Botany.

Second Term—Physiological Botany.

Third Term—Special Botany, Gramineae, etc.

### COLLEGE COURSE (*Third Year.*)

First Term—Cryptogamic Botany, Ferns, Fungi, etc.

### COLLEGE COURSE (*Third Year.*)

First Term—{ General Principles of Horticulture.  
Fruit Culture.

Second Term—{ Vegetable Gardening and Seed Growing.  
Arboriculture and Practical Forestry.

Third Term—{ Practical Floriculture.  
Landscape Gardening.

In accordance with this arrangement I am teaching three classes the present term, viz.:

One of 10 students in Economic Botany.

One of 7 students in Fruit Culture.

One of 4 students in Special Botany.

The instruction in Economic Botany consists of lectures and recitations supplemented by field-work and class excursions. The appended "synopsis" will indicate the scope of instruction in Fruit Culture, which is farther supplemented by practice in the laboratory and observations in the orchard and gardens. I am happy to report that thus far all of the students in the department have manifested a lively interest in their studies, and are doing good, honest, faithful work.

It is also due the department to state, that each of the classes would have been increased at least one-third by elective students, but for conflict of hours with required studies.

The present condition of the gardens, orchard, and whatever pertains to the different out-door divisions of the department, will, I doubt not, be reported by Prof. Townshend or Mr. Thorne, under whose management they have been during the past year.

For the future I am impelled to make the following suggestions:

1. That the department of Botany and Horticulture be entirely separate and distinct from the department of Agriculture. This is absolutely essential to success. Several years of experience in each of these departments, together with pains-taking study and observation of the history of similar departments in different institutions, have fully convinced me of this. I would, therefore, respectfully suggest that at as early a date as practicable an equable division of land, teams, implements, etc., be made, and that each department thereafter keep its own accounts and manage its own affairs independently. This is the only way by which the two departments can work together with satisfaction to themselves or credit to the University.

2. I would recommend that the plat of land lying between the main University building and the President's house—which is now enclosed and not considered as a part of the campus—be devoted to an experimental garden and nursery.

3. That hereafter the experimental fruit-garden be devoted to fruit *alone*, and that no attempt be made to raise vegetables or grain therein.

4. That a portion of the campus in the vicinity of the "lake" be devoted to a botanic garden.

In my judgment, the most essential requisites of success in this department are well-managed fruit and vegetable gardens, a small, but well-stocked nursery of fruit, forest and ornamental trees and plants, and a good botanic garden. Without them the practical operations of Horticulture cannot be illustrated or made familiar.

Aside from their use as a means of instruction, why should not most of the trees, shrubs, and flowers needed to beautify and adorn the grounds be furnished by this department, rather than purchased elsewhere.

The University grounds already contain a fine collection of trees and shrubs, but we should have a genuine arboretum, where *all* varieties that will live in this climate could be found correctly labeled, so that their habits of growth, and value as timber or ornamental plants, could be seen and noted.

Before mentioning the needs of the department, I would call attention to the fact that, for several years past, the utter want of facilities for any horticultural instruction at the University has been the subject of equally just and severe criticism. Not a dollar has been appropriated by the State for this vitally important purpose. The department, as it stands to-day, has scarcely a single appliance—even such as the humblest nurseryman, fruit-culturist, or florist is obliged to secure in order to commence his operations. There may have been good reasons why this is the case, but they no longer exist. It is high time, in this age of universal progress, that this department do something. If it does not advance with the rest, it will fall irretrievably behind. Give it but the means to accomplish its purpose, and its influence will soon be felt in all pertaining to Horticulture. May we not hope that the last may become first, by securing a more generous appropriation than it was possible to obtain in the early history of our University, when the needs of other departments were even greater than is now the need of this.

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The imperative needs of the department are as follows:

1. In order to do efficient work, and make the department really useful in the way of instruction and experimentation, we require a separate building dedicated to Botany and Horticulture. Upon the first floor of this building there should be a well-furnished class-room and suitably appointed laboratories; also, an office and seed-room. The second story should contain the museum and store-rooms. There should be a capacious frost-proof basement for the storage of fruit and garden products, for stocks, root-grafts, etc., for the nursery, and rooms where many of the practical horticultural operations could be carried on. Such a building can be erected and properly equipped for about ten thousand dollars.

2. We need a neat, well-constructed greenhouse—not an expensive conservatory—but a structure adapted to the propagation and preservation of plants for study by the students of Botany, for the raising of bedding plants for the college grounds, and for raising cuttings and seedlings of fruits, ornamental plants, vegetables, etc., needed in the garden and nursery. Such a structure is also necessary merely to illustrate the subject of plant-culture under glass. It should be erected in connection with the building above mentioned, and constructed in the most approved modern style, with the best heating apparatus. The cost should not exceed five thousand dollars.

3. We need a dwelling-house for the Professor of Botany and Horticulture.

At present the alternative is to live in a manner neither convenient nor economical, or else be so far removed from work as to be unable to give it the personal attention it demands.

Some minor, though none the less necessary wants, are the following:

1. An assortment of botanical paper for pressing, mounting and preserving plants. A suitable supply for immediate necessities can be secured for about \$25.

2. Six dissecting microscopes, \$50.

3. A pair of balances for weighing small quantities of seed, \$25.

4. A case for herbarium and botanical models in south-east corner of class room, estimated cost, \$75.

5. A sink, with proper fixtures, in the north-east corner of botanical class room, where there already is a water-supply and waste-pipe, estimated cost, \$8.

6. An assortment of stakes and labels for out-door experiments, \$10.

7. An assortment of horticultural hand-tools, budding-knives, grafting implements, pruning shears, etc., \$10.

8. A small assortment of chemical re-agents, alcohol, poisons, etc., for preserving specimens; also, a few funnels, beakers, jars, bottles, etc., \$10.

9. Four zinc trays for testing seeds, \$8.

The above wants are not simply desirable, but absolutely indispensable. If they are not supplied, it is impossible to do anything like thoroughly good work.

I am proud of the State of Ohio, proud of its resources, still prouder of its horticultural possibilities. I live in the joyful trust that this department of the Ohio State University shall soon receive such substantial aid and encouragement, that it can do something toward developing these possibilities, and that through its influence Horticulture may be impelled toward a perfection of which few have hardly dared to dream.

Respectfully submitted.

WILLIAM R. LAZENBY,  
*Prof. of Botany and Horticulture.*

*Ohio State University, November 4, 1881.*

## DEPARTMENT OF MILITARY SCIENCE AND TACTICS.

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OHIO STATE UNIVERSITY, COLUMBUS, O., Nov. 9, 1881.

*Rev. Walter Q. Scott, President Ohio State University:*

SIR: I have the honor to submit herewith my report to you, of the Military Department of the Ohio State University.

I assumed charge of this Department at the beginning of the present term, and have now one hundred and seventy-one students enrolled and under practical instruction in military drill. While the students who entered the institution this year were being prepared in the "School of the Soldier," the others, who had received practical instruction under my predecessor, were exercised in company and skirmish drill and in the manual of the piece in artillery. When the new students had made sufficient progress in the drill, I organized a battalion of three companies, and a band or drum corps of fourteen members. The officers and sergeants of the battalion are as follows:

*Staff—*

Horace Allen, 1st Lieutenant and Adjutant.  
H. K. Terry, 2d Lieutenant and Quartermaster.  
D. S. Gaskell, Sergeant-Major.  
Edward Orton, jr., Band Leader.  
C. C. Allen, Quartermaster-Sergeant.

*Company "A"—*

Captain—M. N. Mix, commanding.  
1st Lieutenant—J. R. Lovejoy.  
2d Lieutenant—Wm. Neil.  
1st Sergeant—C. C. Miller.  
Sergeants—Winfield Scott, J. N. Conoway and L. A. Hine.

*Company "D"—*

Captain—E. O. Ackerman, commanding.  
1st Lieutenant—C. S. Amy.  
1st Sergeant—F. L. Allcott.  
Sergeants—M. T. Dozer, W. L. Kiger, Wm. D. House.

*Company "B"—*

1st Lieutenant—James T. Anderson, commanding.  
1st Lieutenant—F. M. Allen.  
2d Lieutenant—D. F. Snyder.  
1st Sergeant—W. S. Devol.  
Sergeants—M. P. Kenney, Harry B. Peters and J. D. Streeper.

These companies are now being drilled in the school of the company. It is also my intention to give practical instruction in battalion movements, skirmish drill, parades, reviews and inspections, as soon as sufficient progress has been made in the

company drill to make these battalion manoeuvres practicable. The duties of guards and sentinels are also being taught practically and theoretically. The class in tactics comprises twenty-one students, and five attend the lectures in military science.

Recognizing the fact that the object of giving military instruction to the students of the University is not so much to make soldiers of them as it is to train these young men in habits of obedience to fixed rules, of neatness of personal appearance, quickness of perception and promptness in execution of orders, as well as to give them a physical exercise which tends to impart ease and grace to the movements of the body, I have thus far endeavored to shape my course in such a manner as has seemed to me most likely to accomplish these ends. I have hitherto not only met with no opposition, but I have had the sympathy and co-operation of the great majority of those under my direction in the military department. Nearly all who take part in the drill manifest an earnestness of purpose and an interest in it which is very encouraging to me, and which I hope to be able to keep alive throughout the year.

I desire here, also, to express my high appreciation of the efficient services rendered by the senior officers, appointed by my predecessor, namely, Captains M. N. Mix and E. O. Ackerman, and Lieutenants James T. Anderson, late Adjutant, and F. M. Allen, late Quartermaster, in the performance of the duties with which they were charged previous to the organization of the present battalion.

#### DEPARTMENT OF MATHEMATICS.

In this department I hold, by appointment of the Board of Trustees, the position of Assistant Professor—the department being in charge of Prof. McFarland. I have two classes, one being a division of the first preparatory class in algebra, and consisting of thirty-one students, and the other, a portion of the second preparatory class in geometry, numbering thirty-five students. With a few individual exceptions my class in algebra is doing well, while the progress of my class in geometry is beyond my expectations. The backwardness of the few students referred to in the class in algebra, is due to want of proper preparation in the introductory parts of this branch of mathematics and inability to make up this deficiency, and at the same time keep up with the class to which they belong.

I am, sir, very respectfully,

GEORGE RÜHLEN.

*1st Lieut. 17th U. S. Infantry, Prof. Military Science and Tactics, and Assistant Professor of Mathematics.*

DEPARTMENT OF INDUSTRIAL ART.

OHIO STATE UNIVERSITY, COLUMBUS, November 1, 1881.

Rev. W. Q. Scott, President:

DEAR SIR: I have the honor to present my second annual report for the department of Mechanical and Free-hand Drawing.

The following is a statement of the number of students pursuing the two studies—Mechanical and Free-hand Drawing during the college year 1880–1881:

*First Term.*

Mechanical Drawing.....	13
Free-hand Drawing.....	42

*Second Term.*

Free-hand Drawing.....	50
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*Third Term.*

Free-hand Drawing.....	40
	<hr/>
	145
Twice counted.....	35
	<hr/>
Net total for year.....	110

The present term shows a marked increase in the number of students. In the Mechanical Drawing class there are at present studying and practicing Projection Drawing, 30 students: an increase of one hundred per cent. over last year. In the Free-hand class 45 students avail themselves of the advantages of the studio.

Free-hand Drawing is not required in any course in the University, except a very limited amount—two hours each week in the Freshman year. The studio, however, is open to any student of the University who desires to occupy in this manner any odd hour, though not to the detriment of his regular studies. Drawing is taken as one of the three regular studies by a number of students—twenty the present term; although it is not recognized as one of the required studies for any degree. Drawing, therefore, being in this elective condition, an evil arises which is perhaps irremediable—that of the irregularity of students' hours; precluding all class lectures. Principles of drawing and coloring are explained in the studio individually to pupils.

Besides the elementary students in Free-hand Drawing there are the following advanced students (included in the enumeration) pursuing higher branches, viz.: five in water color drawing; three in oil painting; one in clay modeling, and five in crayon portraits.

I have also one student in Architectural Drawing. I am pleased to have some interest shown in this study, and will cheerfully welcome others who desire to study in the same direction. I have purchased a series of Architectural plates, and should more students join the class in the future, other copies might be needed. I would I would also suggest that more advanced drawing casts are needed for the advanced students.

I have taken the authority to order one life-size bust, but earnestly desire that a few more may be purchased.

To cover expenses of this nature, I respectfully request that the sum of \$50 be appropriated for the ensuing year.

I gratefully acknowledge the sum appropriated for the department last year.

Very respectfully,

W. A. MASON, JR.,  
*Assistant Professor Industrial Art.*

## DEPARTMENT OF FRENCH AND GERMAN.

OHIO STATE UNIVERSITY, November 7, 1881.

*President Scott :*

SIR: I have the honor to submit the following annual report of the French and German classes.

The course of study in these languages continues through two years ; hence, there are two classes every year in each language. The number in the several classes now is :

Sophomore French .....	14
Freshman French .....	31
2d Prepar. German .....	22
1st Prepar. German.....	41
<hr/>	
Total number .....	108

This is certainly a good per cent. of the number of students now in the University, and when the number in the second-year classes is compared with that of preceding years, it will be seen that there is a good increase in the number that continue the study through the second year. This increase indicates not only that the regular and complete courses of study are more generally accepted, but also that the usefulness of a knowledge of these languages is now better understood than heretofore.

The following table shows the recitations received per week by these classes :

Sophomore French .....	2 per week.
Freshman French .....	5 "
2d Prepar. German .....	5 "
1st Prepar. German .....	5 "

making daily recitations for all but the Sophomore French. Until the beginning of the present term this class also had daily recitations ; at this time it was thought advisable to add another year of Physics to the curriculum, but as the daily programme was already somewhat crowded, and as the branch to be added was to be included in the regular college courses, it was necessary that some other branch of study should share its time with this new one. The Sophomore French having been selected as the one to undergo this limitation, its recitations per week were fixed as shown by the table. As to the results of this change I am not at present prepared to speak ; there has not yet been time enough elapse since the change to judge it properly. Before taking up the subject of the method pursued in the study of these languages, I would speak of an idea that exists in this country in regard to the study of modern languages. It is this: The study of a modern language is easy ; therefore, but a short time is needed to acquire as skillful a use of it as one "to the manner born." Some, therefore, to the learning of one devote three, others not quite so sure of their talents in this direction, will devote six months ; but as to two years—



the length of time usually given in colleges to this study—as to two years, why, as regards the amount of knowledge the usual American thinks he can attain in that time, his two years must be made to equal five or ten years of the European. But it is now time to recognize the fact, that no average college student, whose attention is divided among several branches of study, can, even in two years, acquire a perfect knowledge of any language. He would not expect to become a perfect geologist, a perfect chemist, or a perfect anything else in that time, and he must not expect to become a perfect linguist, even in his own tongue. He can learn much, but not all. Where two years only can be given to such study, during the first year the foundation for a knowledge of it should be prepared. This should consist of the ability to read it with tolerable ease, and the most careful study of the principles on which the construction of the language rests. Then, during the second year, the student should be taught to apply these principles by composing in the language; this gives skill in writing it, and no knowledge of a language is practical without this ability. Having gained this much, to converse in it becomes comparatively an easy matter, for in order to compose in a language one must *think* in it, and, of course, no one can speak a language readily who does not think in it. Another thing—when once the ability to read and write a language readily, is acquired, it is rarely forgotten, but the ability to speak it, without the former knowledge, is soon lost when one is where the language is not in common use. Some attention should be given also in the second year to the literature of the language, in order to awaken in the student a desire for a fuller study of it. That such attention, when carefully conducted, rarely fails in its object, I have had many proofs. This, then, is a partial explanation of the method pursued in these two languages. In addition to the classes mentioned I have charge, for this year only, of a section of the Preparatory Rhetoric. This class now numbers thirty, and recites once a week. It was feared that, coming so seldom, it would be difficult to keep the class interested in its work, but the interest that is manifested to make the most of the time by acquiring as much knowledge of the subject as possible is very encouraging.

The classes described in the above report are making, so far as I can reasonably judge, good progress in their work.

Very respectfully,

ALICE K. WILLIAMS,  
*Instructor French and German.*

# CIRCULAR AND CATALOGUE.

# FACULTY.

**REV. WALTER Q. SCOTT, A. M.,**  
President and Professor of Philosophy and Political Economy.

**EDWARD ORTON, PH. D., LL. D.,**  
Professor of Geology.

**SIDNEY A. NORTON, PH. D., LL. D.,**  
Professor of General and Applied Chemistry.

**NORTON S. TOWNSHEND, M. D.,**  
Professor of Agriculture and Veterinary Science.

**R. W. MCFARLAND, A. M., LL. D.**  
Professor of Mathematics and Civil Engineering.

**ALBERT H. TUTTLE, M. Sc.,**  
Professor of Zoology and Comparative Anatomy.

**S. W. ROBINSON, C. E.,**  
Professor of Mechanics.

**T. C. MENDENHALL, PH. D.,**  
Professor of Physics.

**NAT. W. LORD, E. M.,**  
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**WILLIAM R. LAZENBY, AG. B.,**  
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**GEORGE RUHLEN,**  
First Lieut. 17th Infantry, U. S. A., Professor of Military Science and Tactics, and Assistant  
Professor of Mathematics.

**WILLIAM A. MASON, JR.,**  
Assistant Professor of Industrial Art.

**ALICE WILLIAMS,**  
Instructor in the French and German Languages.

**S. C. DERBY, A. M.,**  
Librarian.

**BELLE SWICKARD,**  
Assistant Librarian.

## STUDENT ASSISTANTS.

---

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CHARLES C. MILLER,  
BELLE SWICKARD,

Assistants in Latin and Greek.

DAVID O'BRINE,

Assistant in Chemistry.

HORACE L. WILGUS,

Assistant in Mathematics.

WILLIAM K. CHERRYHOLMES, B. S.,

Assistant in Zoology.

NEWTON M. ANDERSON,

FREDERICK KEEFER,

WILLIS S. JONES,

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## ORGANIZATION AND EQUIPMENT.

The Ohio State University is founded on the Congressional land grant of July, 1862. By that act a large amount of the public land was turned over to the several States, the proceeds of the sales to be devoted to the better education of the industrial classes. The share of each State was proportioned to its representation in the National Legislature, and thus six hundred and thirty thousand acres came into the possession of Ohio. This munificent gift was unfortunately pressed for sale upon a temporarily overstocked market, and the State realized only fifty-four cents to the acre. The total amount of the sales (\$342,450) was, however, put at interest, and when the institution was opened, in September, 1873, the principal and interest together constituted a productive fund of something over \$500,000, which has since been increased to a small extent, until an annual income of \$34,000.00 has been reached.

The Legislature having passed an act to authorize the several counties of the State to raise money to secure the location of the University, an offer of \$300,000 from Franklin county was accepted by the Board of Trustees, and the University was permanently located at Columbus. The money furnished by Franklin county has been mainly expended in the three following items: 1. The purchase of a valuable farm of three hundred and thirty acres within the corporate limits of the city of Columbus. 2. The erection of a spacious and elegant college building, and two dormitories for students. 3. The equipment of the various departments of instruction in the University.

The total value of endowment and property at the present time exceeds \$1,000,000.

The departments already established, and the provisions made for giving instruction in them, are as follows:

### I. PHYSICS.

For this subject ample provision has been made in the equipment of the institution. It is safe to say that, in the opportunities afforded for thorough study in it, the University already surpasses most of the institutions of the country. Its laboratory is supplied with expensive and well-selected apparatus, designed not only for illustration, but also for original research in all the leading divisions of the science. Students are directed to its use in the way of original investigation as soon as they are properly prepared to undertake such work.

### II. CHEMISTRY.

The course in General Chemistry provides instruction in pure science, developing the theories and laws in order, and illustrating them by an extended suite of experiments. This course is supplemented by an important series of lectures on the applications of Chemistry to the Arts.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy.

The course in Quantitative Chemistry includes both the volumetric and the gravimetric methods. The student will also be assisted in any special branch of the science that he may desire, and take up in detail topics which relate to pharmacy, medicine, agriculture, and other sciences in which the principles of Chemistry are applied.

### III. ZOOLOGY AND COMPARATIVE ANATOMY.

The subjects of Zoology and Comparative Anatomy constitute a distinct professorship, and means have been provided for making the instruction in this subject thorough, practical and extensive. A large amount of material, selected with special reference to its availability in teaching, has already been accumulated.

A dissecting-room, with good facilities for the study of veterinary anatomy, is also furnished, while for practical training in microscopy there have been supplied eight microscope stands, representing all the principal modes of construction, and nineteen objectives, giving powers up to 2,500 diameters.

A Physiological Laboratory is now established, which is supplied with apparatus for the quantitative determination of several of the more important animal functions. It constitutes an important and timely addition to the means of instruction furnished by this department.

### IV. BOTANY AND HORTICULTURE.

These subjects, comprising the scientific and practical sides of the study of the vegetable kingdom, have recently been combined in a separate department, and extended and thorough instruction in them has already been begun.

### V. GEOLOGY.

The University is able to present unusual advantages for the study of Geology. By act of the Legislature it has been put in possession of all the collections made by the late State Geological Survey, and these collections have been supplemented by valuable additions of fossils and minerals from various sources. The State collection embraces a very complete representation of every geological formation shown in Ohio.

### VI. AGRICULTURE.

The department of Agriculture, which also includes the *diseases of animals* and their *medical and surgical treatment*, is provided for in a distinct professorship, the aim of which is to acquaint the student with the theory and practice of a truly rational system in this most important field. The course extends through two years, and is rendered practical by being constantly connected with the work that is carried on upon the farm. Numerous opportunities are afforded to the students in veterinary medicine of observing the treatment of diseased animals.



## VII. MATHEMATICS.

Under the two professorships that divide the work of Mathematics between them, a full course of instruction is provided for, including also the subject of Astronomy. A term is given to Trigonometry, and one term is given to each of the three subjects, Analytical Geometry, the Differential and the Integral Calculus. The work of several other departments, especially Civil Engineering, Physics and Mechanics, and Chemistry, require the constant and practical application of the knowledge acquired in mathematical study.

## VIII. DRAWING AND DESIGN.

Instruction in these subjects is provided in the University, and all needful facilities are furnished by which those who wish may acquire skill in these several departments of art. Drawing is made a prominent element in the education of all students in engineering.

## IX. CIVIL ENGINEERING.

This course, which extends through two years, includes surveying, location, and construction of roads and railroads, construction of bridges, strength of materials, geodesy, etc. The time of one professor is chiefly devoted to this department. Field-work is extensive and varied, for the execution of which a full set of engineering instruments of the finest construction is provided.

## X. MINING ENGINEERING.

This department is now in successful operation, and classes are established in the several branches belonging to it. The mining of coal and the manufacture and working of iron are recognized as leading subjects in it, but full courses of instruction are offered in general metallurgy. The department is well equipped, both for instruction and practical work.

## XI. MECHANICAL ENGINEERING.

The University is able to offer excellent advantages in this important subject. A mechanical laboratory has been established, and is in successful operation. The Russian system of hand-training has been introduced, which insures the imparting of a measure of practical skill, together with theoretical instruction.

## XII. MILITARY SCIENCE AND TACTICS.

In accordance with an act of Congress, an officer of the United States army has been detailed by the War Department to give instruction in the subjects named above. An extended course of lectures and recitations in Military Science is offered to such students as desire it, while thorough training in military drill is made obligatory upon all male students, except such as are excused on reasonable grounds.

## XIII. FRENCH AND GERMAN LANGUAGES.

In the organization of the University, special prominence is given to the modern languages, as all who expect to attain any good degree of proficiency in the natural sciences must certainly acquaint themselves with French and German.

These languages can be pursued in courses as extensive as the needs of the student may require.

#### XIV. LATIN AND GREEK LANGUAGES.

Ample provision is also made for the study of the Latin and Greek languages, not only in compliance with those terms of the organic law of the University which forbid the exclusion of classical studies, and which declare one of the aims of the institution thus endowed to be "the liberal education of the industrial classes," but also because of the great advantage which such study gives in acquiring a thorough knowledge of our own and other modern languages; and, in the last place, but not the least important, because of the relations which they bear to literary, historical, and scientific studies.

#### XV. PHILOSOPHY AND POLITICAL ECONOMY.

The course in Philosophy extends through the Junior and Senior years. The Junior Year is devoted to Psychology and the History of Philosophy; the Senior year to Ethics, Logic, Metaphysics, and Political Economy. All these subjects are taught by text-books. The students work up the topics by examining their own minds, by searching the best authors, and by weekly essays and discussions which are required from each student.

#### XVI. HISTORY AND ENGLISH.

Extended courses in both subjects are provided. Three years of work in advanced History are afforded to candidates for the degree of Bachelor of Philosophy. The last of these, a course in United States Constitutional History and Civil Polity, is included in the courses for the degrees of B. A. and B. Sc.

In English Language and Literature the course extends through the last three college years. In the the Sophomore year, two terms are devoted to the Art of Discourse and one term to the study of words. In the Junior year, English, as a classic, is taken up. Beginning in the study of the Anglo-Saxon, it includes the critical reading of texts according to the methods employed with Latin and Greek, and a historical survey of the body of our literature.

The subjects are taught both by text-books and lectures, and the student is trained as far as possible to habits of independent research.

## DEGREES AND COURSES OF STUDY.

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The University offers three general degrees, viz.: Bachelor of Arts (A.B.), Bachelor of Philosophy (Ph.B.), and Bachelor of Science (B.Sc.). It also offers four special degrees, viz.: Civil Engineer (C.E.), Mining Engineer (M.E.), Mechanical Engineer (Mech. Eng.), and Bachelor of Agriculture (B.Ag.).

In addition to these degrees, certificates of work done in the several departments will be granted, as hereafter stated.

The courses of study which lead to the above-named degrees can be learned from the following statements and schedules.

A Preparatory Course of two years' duration is provided for those students who enter the University directly from the common or district schools. This course includes the ordinary studies of the better grade of the high schools of the State. It is expected that the graduates of these schools can sustain examination in the entire Preparatory Course, and enter directly upon proper college work.

The Preparatory Course is shown in the following schedule:

### PREPARATORY COURSE.

#### FIRST YEAR.

First Term—Algebra, from Quadratics; Physical Geography; Latin or German.

Second Term—Algebra completed; United States History; Latin or German.

Third Term—Botany; General History; Latin or German.

Exercises in English Grammar and Composition one hour each week throughout the year.

#### SECOND YEAR.

First Term—Geometry; Human Physiology; Latin or German.

Second Term—Geometry completed; Physics; Latin or German.

Third Term—Trigonometry; Physics; Latin or German.

Exercises in Rhetoric and English Composition one hour each week throughout the year.

Either Latin or German, as named above, is to be chosen for a two years' course. Students looking forward to the degree of Bachelor of Arts, or to the degree of Bachelor of Philosophy, will take Latin; candidates for other degrees will take German.

*Text-Books*—Algebra, *Loomis*; Geometry, *Loomis*; Trigonometry, *Loomis*; Physical Geography, *Guyot*; Human Physiology, *Huxley*; United States History, *Eliot*; General History, *Freeman*; Botany, *Wood*; Physics, *Norton*.

The text-books in Latin and German will be found under the heads of these departments on a subsequent page.

### GENERAL AND TECHNICAL COURSES.

In the following schedules the studies required for the several degrees of the University are named. The character and amount of the work done in each can be further learned from the detailed statements in regard to the departments that follow the schedules. It will be observed that a considerable amount of the work is common to the several courses, and, further, that this common work is made, for the most part, synchronistic in the courses.

## (A.) GENERAL COURSES.

FOR THE DEGREE OF BACHELOR OF ARTS.

*Freshman Year.*

First Term.	Latin, <i>Livy</i> .	Greek, <i>White's Lessons</i> .	Chemistry, <i>Norton</i> .
Second Term.	Latin, <i>Tacitus</i> .	Greek, <i>Lessons and Anabasis, Book I</i> .	Chemistry, <i>Norton</i> .
Third Term.	Latin, <i>Horace, Odes</i> .	Greek, <i>Anabasis, Books II and III</i> .	Chemistry, 2-5, <i>Lectures</i> . Mineralogy, 3-5, <i>Dana</i> .

Free-hand Drawing two hours each week throughout the year.

*Sophomore Year.*

First Term.	Latin, <i>Horace, Satires</i> , 3. English, <i>Art of Discourse Day</i> , 2.	Greek, <i>Memorabilia and Phaedon</i> , 3. Physics, <i>Ganot</i> , 3.	Botany, <i>Lectures</i> , 2. Zoology, <i>Packard</i> , 3.
Second Term.	Latin, <i>Tacitus, Histories</i> . English, <i>Art of Discourse Day</i> , 2.	Greek, <i>Herodotus' Selections</i> , 3. Physics, <i>Ganot</i> , 3.	Zoology, <i>Packard</i> , 3. Botany, <i>Lectures</i> , 2.
Third Term.	Latin, <i>Plautus, Quintilian</i> . English, 2. Study of words, French.	Greek, <i>Homer</i> , 3. Physics, <i>Ganot</i> , 3.	Zoology, <i>Packard</i> , 3. Botany, <i>Lectures</i> , 2.

*Junior Year.*

First Term.	Psychology, <i>Porter</i> , 3. Anglo-Saxon, <i>March's Gram. and Reader</i> , 2.	Greek, <i>Euripides</i> , 3. Latin, 2.	Geology, <i>Le Conte</i> , 2.
Second Term.	Psychology, <i>Porter</i> , 3. Chaucer, <i>Marsh's method</i> , 2.	Greek, <i>Sophocles</i> , 3. Latin, 2.	Geology, <i>Le Conte</i> , 3. Astronomy, 2.
Third Term.	History of Philosophy, <i>Schwegler</i> , 3. Shakespeare, <i>Marsh's method</i> , 2.	Greek, <i>Demosthenes</i> , 3. Latin, 2.	Astronomy, <i>Loomis</i> , 3. Geology, 2.

*Senior Year.*

First Term.	Ethics, <i>Bascom</i> .	Greek, 3. English Literature, 2.	Constitutional History, 2. Elective course in Science for the year.
Second Term.	Logic, <i>Jeron's</i> . Political Economy.	Greek, 3 English Literature, 2.	
Third Term.	Metaphysic. Political Economy.	Greek, 3. English Literature, 2.	

FOR THE DEGREE OF BACHELOR OF PHILOSOPHY.

Freshman Year.

First Term.	Latin, <i>Livy.</i>	French, <i>Grammar, Duf-fet.</i>	Chemistry, <i>Norton.</i>
Second Term.	Latin, <i>Cicero.</i>	French, <i>Masson's Classics</i>	Chemistry, <i>Norton.</i>
Third Term.	Latin, <i>Horace.</i>	French, <i>Masson's Classics</i>	{ Chemistry, 2-5, Lectures. Mineralogy, 3-5, Dana.

Free-hand Drawing two hours each week throughout the year.

Sophomore Year.

First Term.	Latin, <i>Horace</i> , 3. English, <i>Art of Dis-course, Day</i> , 2.	Physics, <i>Ganot</i> , 3. French, <i>Moliere</i> , 2.	Zoology, <i>Packard</i> , 3. Botany, <i>Lectures</i> , 2.
Second Term.	Latin, <i>Tacitus</i> , 3. English, <i>Art of Dis-course, Day</i> , 2.	Physics, <i>Ganot</i> , 3. French, <i>Cornille</i> , 2.	Zoology, <i>Packard</i> , 3. Botany, <i>Lectures</i> , 2.
Third Term.	Latin, <i>Plautus, etc.</i> , 3. English, <i>Study of Words, Trench</i> 2.	Physics, <i>Ganot</i> , 3. French, <i>Feuillet</i> , 2.	Zoology, 3. Botany, <i>Lectures</i> , 2.

Junior Year.

First Term.	Psychology, <i>Porter</i> , 3. Anglo-Saxon, <i>March's Gram. and Reader.</i> 2.	History, 3. Latin, 2.	Geology, <i>LeConte</i> , 5.
Second Term.	Psychology, <i>Porter</i> , 2. Chaucer, <i>March's Met.</i> 2.	History, 3. Latin, 2.	Geology, <i>LeConte</i> , 5. Astronomy, <i>Loomis</i> , 2.
Third Term.	History of Philos'phy, <i>Schwegler</i> , 3. Shakespeare, <i>March's Method.</i> 2.	History, 3. Latin, 2.	Geology, 2. Astronomy, 3.

Senior Year.

First Term.	Ethics, <i>Buscom.</i>	History, 2. English Literature. 3.	Constitutional His-tory, 2.
Second Term.	Logic, <i>Jevons.</i> Political Economy.	History, 2. English Literature. 3.	Elective course in Science for the year.
Third Term.	Metaphysic. Political Economy.	History, 2. English Literature. 3.	

## FOR THE DEGREE OF BACHELOR OF SCIENCE.

*Freshman Year.*

First Term.	Analytical Geometry.	French, <i>Duffet</i> .	Chemistry, <i>Norton</i> .
Second Term.	Differential Calculus.	French, <i>Masson's Classics</i>	Chemistry, <i>Norton</i> .
Third Term.	Integral Calculus.	French, <i>Masson's Classics</i>	{ Chemistry, 2. Lectures. Mineralogy, 3. Dana.

Free-hand Drawing two hours each week throughout the year.

*Sophomore Year.*

First Term.	Elective course in Botany, Chemistry, or Physics for the year.	French, <i>Moliere</i> , 2. Physics, <i>Ganot</i> , 3.	{ Botany, <i>Lectures</i> , 2. Zoology, <i>Packard</i> , 3.
Second Term.	English, <i>Day's Art of Discourse</i> , 2. and	French, <i>Corneille</i> , 2. Physics, <i>Ganot</i> , 3.	Botany, <i>Lectures</i> , 2. Zoology, <i>Packard</i> , 3.
Third Term.	Study of words, <i>Trench</i> , 2.	French, <i>Racine</i> , 2. Physics, <i>Ganot</i> , 3.	Botany, <i>Lectures</i> , 2. Zoology, <i>Packard</i> , 3.

*Junior Year.*

First Term.			Geology, <i>LeConte</i> , 5.
Second Term.	Elective course in Botany. Chemistry, or Physics for the year.	Elective course from list of sciences already given, with addition of Anatomy and Physiology.	Geology, <i>LeConte</i> , 3. Astronomy, <i>Loomis</i> , 2.
Third Term.			Geology, <i>LeConte</i> , 2. Astronomy, <i>Loomis</i> , 3.

*Senior Year.*

First Term.			Psychology, <i>Porter</i> , 3. Constitut'l History, 2.
Second Term.	Elective course from Science or from Ethics. Logic and Political Economy.	Elective course from list of sciences given above, with the addition of Geology.	Psychology, <i>Porter</i> , 3. Constitut'l History, 2.
Third Term.			History of Philosophy, <i>Schwegler</i> , 3. Constitut'l History, 2.

It will be observed that at the beginning of the Sophomore Year of the Bachelor of Science course an advanced course in science is to be selected from such branches as have been already studied in their elementary forms in either the Freshman Year or in the Preparatory Course. The choice at this time is therefore confined to the three following, viz.: Botany, Chemistry and Physics.

At the beginning of the Junior Year the list of electives is extended by the addition of Vertebrate Anatomy and Physiology, and at the beginning of the Senior Year by the addition of Paleontology, and also Philosophy and Ethics.

In the Senior Year of the courses for the degrees of Bachelor of Arts and Bachelor of Philosophy, there is also an election to be made by the student. In the former, he can choose from any of the sciences, the elements of which have been previously given, and also from History: in the latter, his election is confined to the sciences.

Rhetorical exercises are required of students in all the above-named courses throughout the Sophomore, Junior and Senior Years.

#### (B.) TECHNICAL COURSES.

The courses for the special degrees of Civil Engineer, Mining Engineer, and Mechanical Engineer, agree with the course for the degree of Bachelor of Science for the Freshman Year. They also have several studies in common with all the courses already named, as will be seen by the schedules. The course for the degree of Bachelor of Agriculture differs to a considerable extent from the courses previously described.

## FOR THE DEGREE OF CIVIL ENGINEER.

*Sophomore Year.*

First Term.	Surveying.	French, <i>Moliere</i> , 2. Physics, <i>Ganot</i> , 3.	Analytical Chemistry.
Second Term.	Descriptive Geometry.	French, <i>Corneille</i> , 2. Physics, <i>Ganot</i> , 3.	Analytical Chemistry.
Third Term.	Calculus.	French, <i>Racine</i> , 2. Physics, <i>Ganot</i> , 3.	Analytical Chemistry.

*Junior Year.*

First Term.	Analytical Mechanics.	Geology.	Analytical Chemistry.
Second Term.	Roads.	Geology.	Analytical Chemistry.
Third Term.	Astronomy.	Geology (Economic).	Analytical Chemistry.

*Senior Year.*

First Term.	Mahan's Civil Engineering.	Physics.	Strength of Materials.
Second Term.	Drawing Shadows and Perspective.	Physics.	Assaying.
Third Term.	Geodesy.	Physics.	Plans, etc.



FOR THE DEGREE OF MINING ENGINEERING.

*Sophomore Year.*

First Term.	Projection Drawing.	Surveying.	Analytical Chemistry.
Second Term.	Descriptive Geometry.	Mahan's Civil Engineering.	Analytical Chemistry.
Third Term.	Special Drawing.	Calculus.	Analytical Chemistry.

*Junior Year.*

First Term.	Geology.	Metallurgy.	Analytical Chemistry.
Second Term.	Geology.	Metallurgy.	Analytical Chemistry.
Third Term.	Geology (Economic).	Metallurgy.	Analytical Chemistry.

*Senior Year.*

First Term.	Assaying.	Analytical Mechanics.	Strength of Materials.
Second Term.	Mining Engineering.	Plans, Specifications, and Estimates for Metallurgical Works.	Blow-pipe Analysis.
Third Term.	Coal Washing and Mechanical Treatment of Ores.	Plans, Specifications, etc.	Determinative Mineralogy.

## FOR THE DEGREE OF MECHANICAL ENGINEER.

*Sophomore Year.*

First Term.	Projection Drawing.	French, 2 Physics, <i>Ganot</i> , 3.	Mechanical Laboratory.
Second Term.	Descriptive Geometry.	French, 2. Physics, <i>Ganot</i> , 3.	Mechanical Laboratory.
Third Term.	Calculus.	French, 2. Physics, <i>Ganot</i> , 3.	Mechanical Laboratory.

*Junior Year.*

First Term.	Geology.	Physics.	Analytical Mechanics.
Second Term.	Geology.	Metallurgy.	Mechanism.
Third Term.	Astronomy.	Physics.	Mechanism.

*Senior Year.*

First Term.	Thermo-Dynamics. Pneumatics.	Physics.	Strength of Materials. Hydraulics.
Second Term.	Prime-Movers.	Physics.	Technical Drawing.
Third Term.	Mill-work.	Physics.	Machine Designing and Drawing.

FOR THE DEGREE OF BACHELOR OF AGRICULTURE.

Freshman Year.

First Term.	Surveying.	Mechanical Laboratory.	Chemistry.
Second Term.	Civil Engineering.	Mechanical Laboratory.	Chemistry.
Third Term.	Civil Engineering. (Roads, Drains, etc.)	Mechanical Laboratory.	{ Chemistry, 2-5. Mineralogy, 3-5.

Sophomore Year.

First Term.	Economic Botany.	Zoology, 3. Cryp. Botany, 2.	Agricultural Chemistry.
Second Term.	Physiological Botany.	Zoology, 3. Cryp. Botany, 2.	Agricultural Chemistry.
Third Term.	Special Botany. Grasses, etc.	Zoology, 3. Cryp. Botany, 2.	Agricultural Chemistry.

Junior Year.

First Term.	Horticulture. (General Principles.) (Fruit Culture.)	Geology.	Anatomy and Physiology.
Second Term.	Horticulture. (Vegetable Garden'g and Seed Growing.) (Arboriculture and Prac- tical Forestry.)	Geology.	Anatomy and Physiology.
Third Term.	Horticulture. (Landscape Gardening.) (Practical Floriculture.)	Geology (Economic)	Anatomy and Physiology.

Senior Year.

First Term.	Soils, Manures, etc.	Domestic Animals— Varieties, etc.	Diseases of Animals.
Second Term.	Farm Crops and Tillage.	Breeding and Feed- ing Stock.	Principles of Treat- ment.
Third Term.	Farm Improvement and Management.	Dairying. Wool Growing, etc.	Particular Diseases.

The range of instruction in the several subjects named above is more particularly defined in the following statements of the work provided in the different departments of the University:

## DEPARTMENTS AND RANGE OF INSTRUCTION.

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### MATHEMATICS.

The preparatory department includes Algebra, Geometry and Plane Trigonometry. In the Freshman Year the subjects of Analytical Geometry, Differential Calculus, and Integral Calculus are taken up, and an additional term is subsequently given to the applications of Calculus in the Engineering courses.

### CIVIL ENGINEERING.

The order of studies in this department can be learned from the schedule which exhibits the course required for the degree of civil engineer.

*Text-Books.*—The works of Loomis on Algebra, Geometry and Astronomy. In parts of the course, works by Davies, Warren, Church, Gillespie, Mahan, Haupt, Worthen, and others.

In addition to the use and study of the text-books, the students are taught and practiced in the use of various astronomical and engineering instruments—the level, the transit, the plane-table, the sextant, the globes. They have practical field-work throughout the year, excepting only when the inclemency of the weather does not admit of it. The work consists in taking differences of level, running lines, measuring horizontal and vertical angles, determining the variation of the magnetic needle, finding the latitude of the pole star and by meridian altitudes of the sun; in fine, every variety of appropriate work which can be executed, is regularly, systematically, and thoroughly done.

### PHYSICS.

The instruction in Physics comprises three grades of work.

In the Preparatory Course, the elements or general principles of Physics is taught during the second and third terms. The work consists, in the main, of a daily recitation, for which lectures by the instructor are occasionally substituted. This course is strictly elementary in its character, and is fully illustrated by experiments throughout.

During the sophomore year all regular students, except candidates for the degrees of Bachelor of Arts, Bachelor of Agriculture and Mining Engineer, have a recitation in Physics on three days of each week. In this course a text-book is used, and the work consists of recitations and lectures combined. Application is here made of the student's knowledge of mathematics to the more advanced portions of Physics. The formulæ representing the more important physical laws are developed, and experiment is made use of whenever necessary to the elucidation of the subject.

In addition to the above, students in Civil or Mechanical Engineering are required to give the equivalent of one daily recitation throughout one year to Higher Physics. Candidates for the degree of Bachelor of Philosophy may elect the same for one year, and candidates for the degree of Bachelor of Science for one, two or three years. The work in this course consists largely of laboratory practice. Lectures are given regularly to the whole class upon subjects of general interest, such as Making and Reducing Observations and their discussion, including the method of Last Squares. Text-books are used and lectures given upon special subjects of study. The attempt is made to make all students familiar with methods of original research, and as far as possible every student is required to do something in the way of original investigation. Before beginning this grade of work students should have completed the course in Pure Mathematics.

#### FIRST YEAR.

First Term—Graphics and Mathematics applied, four-fifths; Experiments, one fifth.

Second Term—Physical Laboratory: Acoustics and Optics.

Third Term—Physical Laboratory: Heat.

#### SECOND YEAR.

First Term—Physical Laboratory: Heat.

Second Term—Physical Laboratory: Heat and Electricity.

Third Term—Physical Laboratory: Electricity and Magnetism.

In the five terms last named, the student uses the instruments of the laboratory in reviewing the work of others; or in original research. There are also combined with this, lectures on proper manipulation and care in keeping notes as conducive to trustworthy results; also, the theory of errors as regards instruments, reduction of observations, etc. The student is enabled to pursue his experiments thoroughly and extensively by means of the apparatus of the department, which includes many rare and valuable instruments.

*Works of Reference, accessible to the Student.*—Atkinson's Ganot's Physics, Deschanel's Physics, Kohlrausch's Physical Measurements, Pickering's Physical Manipulations, Stewart's Heat, Jamin's Physique, Clark and Sabine's Electrical Tables and Formulae, Higg's Electric Lightning, Schwendler's Electric Testing.

#### MECHANICAL ENGINEERING.

This course is intended for those who desire to prepare themselves either for the profession of Mechanical Engineering, for superintending the construction of machinery, or for managing machinery in manufacturing establishments. In it instruction in Principles is combined with practice. The former is mostly given by lectures, while the latter is confined to the Mechanical Laboratory.

The course includes the following special studies, all of which must be passed before taking the degree:

## MECHANISM AND DRAWING—ONE YEAR.

Principles of Mechanism.  
Machine Designing and Drawing.  
Machine Drawing.

## PRIME MOVERS AND MACHINERY—ONE YEAR.

Thermodynamics and Transmission of Fluids.  
Prime movers.  
Machinery and Mill-work.

Besides the above there will be required, for graduating :

Three terms of Elementary Laboratory Practice.  
One term of Machine Construction in Laboratory.  
One term of Strength of Materials and Hydraulics.

## EXPLANATION OF THE COURSE.

In the Principles of Mechanism are studied the parts of machinery by pairs ; or, elementary combinations of mechanism. In this the form and arrangement of the parts necessary for securing the desired modification of motion is sought.

In the Machine Designing the student takes up some problem in the shape of a particular machine for a special purpose. The forms, dimensions and arrangements of the parts are decided upon, and then a drawing is carefully made of the whole. Detail drawings to regulation size are then made, and finished in shade lines, as done in the best shops. The quality of these drawings is sufficient for the requirements of photo-engraving for illustrations upon circulars.

In Thermodynamics are studied the principles which form the groundwork of all heat engines.

In Prime Movers are studied all kinds of heat engines, such as steam, hot-air, etc., and also wind and water-wheels.

Mill-work and machinery takes up valve-gears, fly-wheels, governors, efficiency of parts of machines, strength of parts, etc.

The Mechanical Laboratory is intended for acquainting the student with the materials used in machine construction ; with the forms customary in machinery ; to impart a degree of skill in the use of tools, and a knowledge of the operations and practices of shops. The student uses most of the ordinary tools of the machine-shop, such as the vise, hand-lathe, drilling-machine, engine-lathe, milling and shaping-machine and planer ; also, the forge and anvil, the iron cupola and brass furnace and pattern-makers' tools.

The first term consists of the actual use of tools in executing a set of forms chosen, with a view to supplying the greatest possible amount of practical instruction for the time. This is combined with weekly lectures on tools and their use.

The second term carries the above practice to the fitting together of parts. This is combined with weekly exercises in designing and drawing of machine elements, such as cranks, bearing-boxes, stub-ends, etc.

The third term is fully occupied in fitting parts carefully together, as in the joints of machinery, and in finishing the surfaces by scraping, polishing, burnish-

ing, etc. This is in combination with a weekly exercise in the invention of simple machines for specific operations, such as bending wire staples, cutting wooden combs, etc.

The fourth term of Mechanical Laboratory practice is constructive. It is taken in connection with the principles of mechanism. In the latter, problems in mechanism are worked out, forms and dimensions assigned to the parts, and then these are executed in the Laboratory, resulting in models of mechanical movements for the cabinet.

Projects will be assigned to the student, from time to time, on topics connected with his studies, requiring him to take indicator cards, test the efficiency of boilers, visiting manufacturing establishments, etc., and report. Such reports should be neatly made out on the regulation papers of the Department. These will be taken, in part, for the examinations, and retained for the cabinet.

*Text-Books and Works of Reference.*—Rankin's Steam Engine, and Machinery and Millwork; Weisbach's Mechanics; Willis's Principles of Mechanism; Belanger's Cinematique; Zeuner's Traité de la Chaleur; Neville's Hydraulics; Clausius and McCulloch on Heat; Sellers' Manual of Machine Tools; Shelley's Workshop; Unwin's Elements of Machine Design; Nicholson on Files and Filing.

#### DEPARTMENT OF DRAWING AND DESIGN.

In Mechanical Drawing instruction is given in Elementary Projection Drawing, and to any special student who may desire it, advanced Mechanical Drawing, such as Architectural or other Constructive Drawing.

In Free-Hand Drawing, instruction is given in Elementary Drawing, Outline Drawing from the flat copy and from models, and Shading from models and casts; Water-color Painting from copies, and groups of objects; Oil Painting from the copy, and groups in still-life; Crayon Portraits from copy or photograph, and Modeling in clay.

#### CHEMISTRY.

All students who wish to obtain a degree are required to study Chemistry for two and two-fifths terms. During this time General Chemistry, together with its most important applications to the arts, is taught by the use of text-books and of lectures, illustrated, by an ever-growing collection of the materials used in manufactures, and by a very complete suite of experiments.

After the completion of this elementary course, those who desire to devote special attention to Chemistry enter the analytical laboratory, where they can carry on their work for two years or more. This laboratory work is *required* only of students in Civil Engineering and in Mining. Any other student may enter the laboratory if his time and his strength permit.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy. He is also employed in making various compounds, and, if his time permits, studies exhaustively one or more of the elements and its important compounds.

The course of Quantitative Chemistry includes both the gravimetric and volumetric methods. The analyses are at first confined to those compounds whose structure is known, and afterwards extended to such bodies as the student may require in the special branch of the science to which he desires to devote himself. Opportunity is offered for the study of coals, ores, minerals, fertilizers, soils, or of the useful and waste products in manufactures.

If the student desires, he will also be assisted in taking up in detail topics which relate to Agriculture, to Pharmacy, to Medicine, and to other sciences, or to arts in which the principles of chemistry are applied. A full course of assaying is given in the Mining Laboratory, which is open also to students of chemistry.

A summary of the course is given below.

### REQUIRED OF ALL CANDIDATES FOR GRADUATION.

#### GENERAL CHEMISTRY—TWO AND TWO-FIFTHS TERMS.

Inorganic and Organic Chemistry, and the applications of Chemistry to the Arts.

#### SPECIAL COURSE.

##### FIRST YEAR.

First Term—Qualitative Analysis: Exercises in Blow-pipe and Flame Reactions, Reactions in the dry way, Reactions of Single Bases and Acids.

Second Term—Qualitative Analysis continued: Determination of Mixtures, Blow-pipe Mineralogy. Preparation of Compounds.

Third Term—Quantitative Analysis, Stoichiometry, Review of General Chemistry throughout the year.

##### SECOND YEAR.

Quantitative Analysis: Special studies in Chemistry applied to Pharmacy, to Agriculture, to Manufactures, and to the Arts.

*Text-books.*—Norton's Chemistry, Fowne's Chemistry, Beilstein's Manual, Galloway's Qualitative Chemistry, Will's Analytical Chemistry, Classen's Quantitative Chemistry, Fresenius's Quantitative Chemistry, Caldwell's Agricultural Chemistry.

*Books of Reference.*—Watt's Dictionary of Chemistry, Handwörterbuch der Chemie, Gmelin's Hand-Book of Chemistry, Wagner's Chemical Technology, Graham-Otto's Chemie, Rose's Analytischen Chemie, Hoppe-Seyler and Gorup-Besanez's Physiologischen Chemie, Elderhorst's Determinative Mineralogy.

#### MINING AND METALLURGY.

The course in Mining Engineering secures to the student careful instruction, with ample allowance of time, in the three fundamental branches of the art—mining, preparation of the ore, and its metallurgical treatment. These courses will comprise lectures, the study of text-books, preparation of maps, drawings, and sections, and visits to existing works, with careful reports upon them, and practice in estimates and designs.



For Assaying, there is a full equipment of furnaces and ores for the dry assay, and the wet methods are taught in the chemical laboratory.

An ample collection of minerals is provided, comprising all species with which the mining engineer should be familiar, and to this the students have constant and familiar access.

Crystallography is taught by the aid of a complete collection of large wood models, made especially for the department, and containing every common form.

*Text-Books and Books of Reference*—Dana's Mineralogy, Egleston's Crystallographic Tables, Callon's Mining, Andre's Mining and Mining Machinery, Phillips' Metallurgy, Egleston's Metallurgical Tables, Rittenger's Aufbereitung, Gatzschmann's Aufbereitung, Bodemann & Kerl's Assaying, Mitchell's Assaying, Von Cotta's Ore Deposits.

### GEOLOGY AND PALEONTOLOGY.

In the preparatory course one term is given to Physical Geography. In all of the college courses two terms of General Geology are required, and in two of the engineering courses a third term is added, in which the subject of Economic Geology is taken up. The former subject is provided for in the first and second terms of the Junior year, and the latter in the third term of the same year.

Le Conte's *Elements of Geology* is made the basis of the instruction in the general course; Economic Geology is taught by lectures.

Students desiring to pursue Geology further can elect it as one of their studies throughout the Senior year. In this year, particular attention will be given to the Geology and Paleontology of Ohio, for the illustration of which subjects the museum affords ample materials. These subjects will be taught by lectures, by practical work in the museum, and as far as possible by field practice.

*Text-Books and Works of Reference*.—Le Conte's *Elements of Geology*, Dana's *Manual of Geology*, Lyell's *Principles of Geology*, Nicholson's *Manual of Paleontology*, Geological Reports of Ohio and other States.

### AGRICULTURE AND VETERINARY SCIENCE.

There are three years of work provided for the student in the department of Agriculture. In the first year, Soils are made a subject of examination, their geological relations and origin are explained, their composition is shown, and how it is determined; the special adaptations of soils to particular crops and modes of culture is shown, and how to increase or restore exhausted fertility; the management of pastures and meadows; the character and value of the different grasses, clovers and other forage plants; the culture of field crops, such as corn, wheat, oats, barley, rye, potatoes, etc.; also the value and application of animal manures, marl, gypsum, wood-ashes, lime, superphosphate, guano, and city sewage.

The work named above occupies the first and second terms. During the remainder of the year the following subjects are treated: Work of the farm and improvements; Drainage, draining tools, and the manufacture of drain-tiles; Irrigation, its value and methods; Farm Roads, and how to make them; Fences, material, construction, and cost; Rural Architecture, applied to the erection of farm-houses, barns, stables, etc.; Farm Machinery.

The second year is mainly spent on the following topics: The natural history,

description and adaptation of the various domestic animals—horse-training, cattle feeding, dairy management, wool-growing, etc.

The work of the third year is spent on the general subject of Veterinary Science. The range of instruction can be learned from the topics named below: General principles, Causes, Symptoms, Elements of Disease; Classification of Diseases, Principles of Treatment, and Remedial Agents; Particular Diseases and Operations. These are carefully studied, and, so far as opportunity can be obtained, diseases are treated, and operations made, under the inspection of the class.

#### DEPARTMENT OF BOTANY AND HORTICULTURE.

The instruction in Botany begins with the first year of the Preparatory Course, one term of which is devoted to Structural and Systematic Botany. Further instruction is given in each of the following subjects: Economic Botany, Vegetable Physiology, Vegetable Histology, Gramineal Composition, and other special groups, Ferns and Fungi. Their arrangement, as regards the collegiate terms and years, is seen in the tabulated statement of the different courses of study.

The instruction is given by lectures in connection with Laboratory practice, supplemented by field-work or class excursions.

The practical bearings of the Science are made prominent in all the instruction given. In Fungi, special study is made of those forms producing rust, mildew, blight, etc., which prove so destructive to cultivated plants.

In Economic Botany, besides a study of the special characteristics, geographical distribution, and distinctive properties of all the prominent natural orders, the history, uses and importance of the different economic species, included in their orders, are fully considered.

The study of Horticulture comprises lectures and recitations in the class-room, supplemented by observations and practice in the gardens and orchards. It is treated as an art based on science. The instruction continues throughout the year. The first term is devoted to a study of the General Principles of Horticulture and Fruit culture. Under the first general subject the following are among the topics considered: Horticulture, as a profession, its relation to science; location for Horticultural work: implements, fertilizers, draining and irrigation, weeds and insects, management of help, marketing, etc.

The course in Fruit Culture embraces a study of the origin, history, methods of propagation, pruning and training, harvesting and marketing, insect enemies, diseases and varieties of both the small and large fruits.

In Arboriculture and Forestry, special attention is given to the influence of forests upon climate, the value of trees for timber and ornament, the best methods of culture, and a history of different varieties.

The instruction in Vegetable Culture includes kitchen and market gardening and seed-growing. Among the subjects considered are: location of the garden, laying out ground, draining, special preparation of soil, irrigation, management of composts, commercial fertilizers, implements, selection of seed, construction and management of green-houses, hot-beds, cold-frames; special garden crops, history, cultivation and varieties of each; growing seeds for home use and for market, the family kitchen garden, etc. In connection with the lectures, experiments, such

as testing the vitality and germinating power of different seeds, are conducted in the Laboratory.

The third term is devoted to Practical Floriculture and Landscape Gardening. The general subject is divided into the following topics: window-gardening, general management of house-plants, hanging-baskets, climbing vines, flowering bulbs, ferneries, Wardian cases, etc.; out-door flower-gardening, commercial flower-gardening, lawns, walks and drives, ornamental shrubs and trees. Flower-beds in the borders, and a considerable collection of ornamental shrubs and trees on the college grounds afford valuable means of illustration in the study of the above subjects.

### ZOOLOGY AND COMPARATIVE ANATOMY.

The work of this department comprises the study of animal life, alike from the anatomical and the physiological aspect. Preparatory students receive, during the first term of their second year, instruction in this department in the elements of human anatomy and physiology. It is the object of this instruction to impart to these students such general knowledge of the structure and functions of their own bodies as will serve as a guide to their maintenance in a state of health and usefulness. Huxley's *Lessons in Elementary Physiology* is used as a text-book, accompanied by lectures and by anatomical and histological demonstrations.

All students who are candidates for bachelor's degrees receive instruction in Zoölogy during their Sophomore Year in this department. This instruction will be by lectures, with collateral reading, demonstrations, and such laboratory exercises as the size of the classes from year to year will permit, and will have for its object to impart to the student a clear conception of the animal kingdom as a whole rather than a mere technical familiarity with one of its lesser divisions, to illustrate the objects and methods of classification, to indicate the more important of those morphological relations on which all intelligent classification is based, and to give some insight into those principles which underlie all the phenomena of animal life. All the classes of the animal kingdom (as well as the orders of the more important classes) will receive consideration, but the larger proportion of the student's attention will be directed to the classes and order of the Invertebrata, partly because they include those forms least likely otherwise to come under their observation, and partly because of the larger amount of work done upon the Vertebrata in the advanced work of the department.

At the beginning of the Junior Year students who are candidates for the degree of Bachelor of Science have open to their election the advanced work of this department. The first year of this work is devoted mainly to the study of Physiology, with its necessary accompaniments of Histology and Physiological Anatomy, in the following manner:

The student begins the consideration of any function, or group of functions, by a careful dissection of the organs involved in one or more of the domestic animals. The dissecting-room is convenient and well-lighted, and is well supplied with the necessary material and appliances. While the human body is never dissected here, students looking to the medical profession can here acquire a knowledge of practical anatomy and an amount of experience that will prove of great service in the future.

The Histology of the parts involved follows, then anatomy. The student is here

not only furnished with suitable preparations for study, but also taught to harden material, to cut, stain, and mount sections for himself, and to perform all the histological manipulations. The laboratory is supplied with microscopes, microtomes, etc., and with all necessary reagents, and offers special facilities in this direction.

The form, structure and relations of the organs involved having been duly examined, the student now proceeds to the dissection of the function in question. The Physiological Laboratory is provided with facilities for practical work in chemical physiology, such work being supplemented by reading and lectures. Provision having not yet been made for the practical study of the physics and mechanics of the body, instruction is given in these cases by reading and lectures only.

It is, of course, not practicable to discuss in this manner all the functions of the animal body in a single year. Such a selection will be made each year as will best illustrate the methods and progress of physiological research, and will, all things considered, be most profitable for the students then in the laboratory.

This year's work is open to all students (other than those indicated), who have completed the required Physics, Chemistry, Physiology and Zoölogy of the preparatory and college classes. It is required of Juniors in Agriculture.

The second year's work, open to all who have completed the work of the first year, deals with the phenomena of animal life from morphological rather than the physiological side. The organization, classification and distribution of animals, the principles of comparative anatomy, the phenomena of embryology and their significance will here receive attention.

While the work of this year will be arranged largely with reference to the requirements and aptitudes of each student, the following general plan will be followed. Each student will be required to study as thoroughly as the time and the facilities afforded by the department will permit, the Zoölogy of one of the lower divisions of the Invertebrata, the morphology of one or more classes from one of the higher divisions, and the comparative anatomy of at least one group of organs in the Vertebrata.

In addition to numerous works of reference accessible to students, the following hand-books are required to be provided: for the first year's work, Mivart's *Lessons in Anatomy*, Prudden's *Practical Histology*, and Sanderson's *Syllabus of Lectures on Physiology* (2d edition); Frey's *Compendium of Histology* and Foster's *Text-book of Physiology* are recommended in addition; for the second years' work, Gegenbaur's *Comparative Anatomy*, and Huxley's *Anatomy of Invertebrates*.

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## HISTORY AND ENGLISH.

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### HISTORY.

Elementary instruction in United States and General History is afforded in the preparatory course. Three courses of Advanced History are provided for students degree of Bachelor of Philosophy. The third of these, a course in United States Constitutional History, is also required of candidates for the degrees of B.A. and B.Sc.

The arrangement of the work is as follows

## PREPARATORY COURSE.

*First Year.*

Second Term—United States History (Eliot).

Third Term—General History (Freeman).

## COLLEGE COURSE.

*Junior Year of Course for the Degree of Ph.B.*

The Middle Ages; text-book, Hallam. Lectures. Three hours per week for a half year.

Modern History to 1815 as seen in the Conflict of Liberty and Absolutism; text-book and lectures. Three hours per week for a half year.

*Senior Year of the same Course.*

History of the English Constitution; text-book and lectures. Two hours per week for a half year.

The History of the XIXth Century and present condition of the Great Powers; text-book and lectures. Two hours per week for a half year.

*Senior Year of the Courses for the Degrees of B.A., Ph.B., and B.Sc.*

United States Constitutional History and Civil Polity; by lectures and theses. Two hours per week throughout the year.

*Text-books and works of reference.*—The histories by Hallam, Sheppard, Sismondi, Gibbon, Martin, Von Sybel, Thiers, Alison, Motley, Dunham, Von Raumer, Von Ranke, Gervinus, Savigny, Bryce, Green, Freeman, Hume, Macaulay, Turner, Stubbs, May, Secley, Arndt, Adams, Mackenzie, and Freeman's Historical Geography of Europe, etc., etc.

*Works of reference in Constitutional History of the United States.*—Curtis' History of the Constitution; Von Holst's Constitutional History of the United States; Frothingham's Rise of the Republic; the Federalist; the works of Adams, Hamilton, Jefferson, Madison, Webster, Elliot's Debates, Benton's Thirty years' View, The Annals of Congress, Benton's Abridgement of the Debates of Congress, etc.

## ENGLISH.

The advanced work in English runs through two years in the courses for B.A. and B.Ph. The following progressive course is provided:

*Junior Year.*

First Term—Anglo-Saxon (March's Grammar and Reader).

Second Term—Chaucer (Clarendon Press edition of Prologue, Knight's Tale, etc.)

Third Term—Shakespeare (Julius Caesar, and Macbeth).

*Senior Year.*

First Term—Hale's Longer English Poems.

Second Term—A History of English Literature.

Third Term—A History of English Literature (including American authors).

The class-room work in English occupies two hours per week in each of the years named. Lectures, historical and critical, on language and literature run parallel to the course prescribed.

*Books for Reference.*—Maetzner's *Englische Grammatik*; Earl: *Philology of the English Tongue*; Marsh: *Lectures on Origin, and History of English Language*; *Lectures on English Language and Literature*; Taine's and Craik's *Histories of English Literature*; Morris: *English Accidence*; Grein: *Angelsächsische Bibliothek*, etc., etc.

### GERMAN AND FRENCH.

A two years' course in each of the two languages is provided for. In either course the student attends mainly to grammatical doctrine and literal versions, at first, and to the literary contents and characteristics of what he reads as he progresses. Lectures upon the respective literatures run through the second year of the courses.

#### GERMAN.

##### *First Year.*

First and Second Terms—Cook's *Otto's German Grammar*.

Third Term—Schiller's *Der Neffe als Onkel*—Composition.

##### *Second Year.*

First Term—Schiller's *Maria Stuart*; Composition.

Second Term—Lessing's *Nathan der Weise*; Literature.

Third Term—Goethe's *Iphigenie*; Literature.

#### FRENCH.

##### *First Year.*

First Term—Duffet: *French Grammar and Exercises*.

Second Term—Grammar continued; Masson's *French Classics*, vol. 5.

Third Term—French Classics continued.

##### *Second Year.*

First Term—Molière: *Le Misanthrope*.

Second Term—Corneille: *Cinna*; Literature.

Third Term—Racine: *Athalie*; Composition.

### LATIN LANGUAGE.

The course of study in Latin extends through four years, and is arranged as follows:

#### PREPARATORY LATIN.

##### *First Year.*

First Term—Leighton's *Latin Lessons*; Allen and Greenough's *Latin Grammar*.

Second Term—Lessons; Caesar, *De Bellico Gallico*, Book II.

Third Term—Caesar continued; Roman History.

*Second Year.*

First Term—Cicero, *In Catilinam*.

Second Term—Cicero continued; Virgil's *Aeneid* begun.

Third Term—Virgil continued.

## COLLEGE COURSE.

*Freshman Year.*

First Term—Livy, Books XXI. and XXII.

Second Term—Tacitus, *Germania* and *Agricola*.

Third Term—Horace, *Odes*.

*Sophomore Year.*

First Term—Horace, Juvenal.

Second Term—Tacitus; *Histories* or *Annals*.

Third Term—Plautus, *Trinummus*; Quintilian.

During the college course instruction will be given by text-books, or lectures in Roman Antiquities and History, in the Latin Language and Literature and in Roman Law. Frequent exercises are required in Latin prose composition.

The requirements in Latin for admission to college embrace three books of Caesar, five orations of Cicero, four books of Virgil's *Aeneid*, Latin Composition and a good knowledge of Latin Grammar.

## GREEK LANGUAGE.

The course in Greek comprises three years of college work, arranged as follows;

*Freshman Year.*

First Term—White's Greek Lessons; Goodwin's Grammar.

Second Term—Lessons; Xenophon's *Anabasis*, Book I.

Third Term—*Anabasis* continued.

*Sophomore Year.*

First Term—Xenophon's *Memorabilia*; Plato's *Phaedon*.

Second Term—Herodotus, selections.

Third Term—Homer, *Iliad* or *Odyssey*.

*Junior Year.*

First Term—Greek Dramatists.

Second Term—Greek Dramatists.

Third Term—Greek Historians and Orators.

Greek Prose Composition and Greek History are studied during the Freshman and Sophomore years.

In the Sophomore and Junior Years instruction is given in Greek Antiquities and Literature.



## PHILOSOPHY AND POLITICAL ECONOMY.

The course in Philosophy extends through the Junior and Senior years. The Junior Year is devoted to Psychology and the History of Philosophy; the Senior year to Ethics, Logic, Metaphysics, and Political Economy. All these subjects are taught by text-books. The students work up the topics by examining their own minds, by searching the best authors, and by weekly essays and discussions which are required from each student.

## PROVISIONS FOR SPECIAL STUDENTS.

To students entering the University for the purpose of taking some special study, and who do not propose to complete a regular course, *full freedom in the selection of the branches which they will pursue is granted, subject only to the necessary limitation that they are prepared to take up with advantage the studies which they select.* They will enter the classes organized for the regular courses, and they can not be allowed to impair the quality of work done in the classes through their own inadequate preparation. Advanced students will find every facility for special work. The preliminary examinations are required of special students.

## PROVISION FOR INSTRUCTION IN AGRICULTURE.

The University recognizes its obligations, imposed in the terms of the grant on which it is founded, to the great industrial interest of agriculture. This obligation it aims to meet in various ways. It fixes its standard of admission so that students may enter its classes from the common schools. It provides for thorough instruction in the branches of science on which Agriculture depends. It has established a professorship of theoretical and applied Agriculture. It has established a professorship of Botany and Horticulture. It has laid down a special course leading to the degree of Bachelor of Agriculture. It has instituted courses of lectures in the sciences relating to Agriculture and in theoretical Agriculture, to which the farmers of the State are invited without charge.

While it is believed that the varied and complex questions with which the farmer has to deal, justify and require, for their most successful treatment, the extended and thorough courses of study necessary for the degree of Bachelor of Agriculture, it is still recognized that comparatively few will return from a six years' course of study to the farm again, and, therefore, all possible advantages are offered to young men from the country who enter the institution for a shorter time. The work of the department of Agriculture is shaped so as to give to this class as large a measure of service as possible for whatever time they are on college ground.

## LITERARY SOCIETIES.

There are two Literary Societies in the University, the *Alcyone* and the *Horton*. Both are provided with rooms in the University building, the equipment of the Alcyone hall having been mainly furnished through the generosity of the late John G. Deshler, of Columbus. The societies are vigorous and effective, and furnish to the student a very desirable training in public speaking and parliamentary order.



# ADMISSION.

## I. TO THE PREPARATORY DEPARTMENT.

For admission to the Preparatory Department of the University, students must pass a satisfactory examination in the branches taught in the common schools, viz.: Reading, Orthography, Writing, Grammar, Geography, Arithmetic, and Algebra through simple equations.

The attention of those proposing to enter the University is especially directed to the terms above given. A competent knowledge of the common school branches is required. The University does not undertake to do the work which the common schools are able and willing to do, viz.: that of grounding the student in the elements of an English education. He must bring with him a fair measure of the training which these schools are prepared to give. If it be asked what is a competent knowledge of these branches, it may be answered that the candidate should certainly have knowledge enough of them to entitle him to a teacher's certificate from a county board of examiners.

Graduates of the high schools of the State are admitted to the Preparatory Department without examination. Applicants having a teacher's certificate of twelve months, are also admitted without examination, except in Algebra, where this study is not included in the certificate.

## II. TO THE COLLEGE CLASSES.

For admission to the Freshman Class of any course, the student must sustain examination in the studies of the Preparatory Department, that lead to this course. The Preparatory Department, as now constituted, agrees very well with the course of instruction in the better grade of high schools of the State. The full requisitions, then, for admission to college standing, are as follows:

English Grammar,  
Common School Geography,  
Physical Geography,  
Arithmetic,  
Algebra,  
Geometry,  
Trigonometry,

Botany,  
Physics,  
Human Physiology,  
United States History,  
General History,  
Latin or German, to the amount of  
a two-years' course.

Graduates of high schools of this State, in cities having a population of 5000 or more, by the census of 1870, and of such other high schools and academies of the State as give satisfactory evidence to the faculty of the efficiency of their courses of study, will, on presenting their diplomas, be admitted to the Freshman Class, in any course of study for which their previous high school work shall have fitted them.

Students who do not design to complete a regular course of instruction, are allowed to select such studies as they are prepared to carry on with profit to themselves and without detriment to the regular classes.

Students are admitted to advanced standing in any of the courses, on their sustaining examination in the work required in the University for such standing.

Students entering from other colleges are required to bring certificates of honorable dismissal.

The University is open to students of both sexes, but there are no buildings provided for the residence of young ladies on the College grounds. Boarding-places, in respectable families, are secured for such young ladies as enter the institution, but the faculty is not so situated that it can exercise supervision over their conduct outside of College hours. Parents, who place their daughters in the University, should be well satisfied as to their discretion, or else should leave them under the care and control of the family with which they board.

### EXPENSES.

1. *College Dues.*—A charge of \$5.00 a term, or \$15.00 a year, is made against all students, under the head of incidental expenses. *There is no charge for tuition in any department of the University* : but advanced students in Chemistry and Physics are required to pay fees to cover, in part, the cost of materials consumed, and the deterioration of the expensive instruments employed. The fee in the Chemical Laboratory is \$10.00 per term, and in the Physical Laboratory \$7.00 per term. These dues are required at the opening of each term.

2. *Board.*—There are two dormitories on the College grounds, provided for the use of students. The smaller of these provides unfurnished rooms, *rent free*, to such students as desire to board themselves, and thus to reduce their expenses to a minimum. Twenty students can be accommodated in the building, two students being assigned to each room. The expense of living in this way falls below \$2.00 per week.

The larger dormitory can accommodate seventy students. It is, for the present, turned over to the University club, *rent free*. Board, fur-

nished room, fuel, light, and washing are, at present prices, supplied for less than \$3.50 per week. New students will not, however, be admitted to the club without special recommendation.

Boarding-clubs are, also, frequently organized in the neighborhood of the College, by students, in which expenses are kept at \$3.50 per week, at present prices.

Board, with furnished rooms, can be obtained in private families within convenient distances of the College, at rates varying from \$3.50 to \$5.00 per week. The ruling rate may be taken as \$4.00 per week for young men, and \$4.50 for young ladies.

Free access to the College is secured by two lines of street railroads, which connect it with the central portions of the city.

There is a large amount of work on the College farm that can be performed to advantage by students, and for which they are paid at the current rates for such labor. A number of students defray all their college expenses by such labor. In the assigning of work, preference is given to students in the department of agriculture, and to those who are ready to devote a certain number of hours each day to the tasks required. *The University does not guarantee work to all applicants.*

A college uniform has been adopted, with which all members of the military organization are required to provide themselves. The cost of the uniform is about \$25.00.

#### SUMMARY.

The expenses of a college year of thirty-eight weeks, will include the following items, viz.:

College dues.....	\$15 00	\$15 00
Board, rooms, etc., at \$3.00 per week.....	114 00	at \$4 50 171 00
Total.....	\$129 00	\$186 00

This estimate provides for light, fuel and washing, but does not include text-books nor charges for laboratory supplies. Students boarding themselves can reduce the lowest of these estimates at least \$30—making a total of \$100.

#### RULES AND REGULATIONS.

The following rules and regulations, among others, are now in force in the University:

#### STANDING.

1. The standing of students shall be reported at the end of each term as “passed with merit,” “passed,” “conditioned,” or “failed”;

such standing to be determined by examination, written, wherever possible.

2. The expression "conditioned" signifies "subject to re-examination at the middle of the following term."

3. The regular work of each laboratory is regarded as the equivalent of five class-room exercises per week. Two consecutive hours daily in the Art department is also so regarded.

4. No special or unclassified student is allowed to take less than fifteen or more than eighteen hours per week of class-room work, or its equivalent, and no student conditioned in any study will be permitted to take more than fifteen hours per week the following term.

5. At the close of each term students must pass in examinations in studies, representing at least ten hours per week, in order to retain their standing in college.

6. Students conditioned in studies, representing ten hours per week, must pass satisfactory examinations in at least one-half of those studies before regaining their standing in college.

7. Students failing in examinations, representing ten hours per week, forfeit their place in college thereby.

8. Students who fail in the term examinations, or in an examination for conditions, are required to take the study or studies in which they fail, on their occurrence, in the following year, except when excused by the faculty.

9. Students failing on a re-examination for a condition, are dropped from that class, if a continuous one.

10. Absence from any examination is construed as a failure therein.

11. Students in any three-term class who fail to attain the grade "passed" at the end of more than one term, shall be required to repeat the work of the whole year, unless excused by the professor in charge; and the students in any two-term class who are reported as "failed" at the end of the second term, may be required by the professor in charge to repeat both terms' work.

#### TERM BILLS.

The payment of term bills is required of all students by the second Wednesday of each term, as the condition of remaining in college.

## CALENDAR.

The Winter term commences on Thursday, January 5, 1882, and continues 12 weeks, closing on Wednesday, March 29.

The Spring term commences on Thursday, April 6, and continues 11 weeks, closing on Wednesday, June 21, (Commencement Day).

The Fall term commences on Thursday, September 14, and continues 14 weeks, closing on Wednesday, December 20.

## CATALOGUE OF STUDENTS.

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The following catalogue includes only the names of students in attendance, November 1, 1881. The whole number of students in attendance between Nov. 1st, 1880, and Nov. 1st, 1881, is 365 :

The under graduate students of the University are arranged in the four following divisions, viz.:

- (1.) Regular Students.
- (2.) Special Students.
- (3.) Preparatory Students.
- (4.) Unclassified Students.

The first division includes the four college classes; the second includes students who have attained college rank by completing the preparatory course or its equivalent, but are now pursuing selected studies; the third division includes the students that are pursuing the regular preparatory course; while the fourth includes all other students.

Degrees in course were conferred at the last commencement, June 21, 1881, as follows:

- The degree of Master of Science upon Curtis C. Howard, B.Sc. M.D.
- The degree of Mining Engineer upon Ferdinand Howald, B.A.

### CLASS OF 1881.

Josephine M. Bates, B.Ph.  
William K. Cherryholmes, B.Sc.  
Charles M. Lewis, B.A.  
David O'Brien, B.Sc.  
Harwood S. Pool, B.Ph.  
Kenneth D. Wood, B.A.

### CERTIFICATES OF PROFICIENCY.

William E. Hawley.	}	In Civil Engineering.
John C. McCullough.		
Jacob D. Streeper.		

### RESIDENT GRADUATES.

William K. Cherryholmes, B.Sc.  
David O'Brien, B.Sc.

## REGULAR STUDENTS.

Name.	Residence.	County.
<b>SENIOR CLASS.</b>		
Davis, Floyd .....	Ithaca, N. Y .....	.....
Donham, William W .....	Lindale .....	Clermont.
Fassig, Oliver L.....	Columbus .....	Franklin.
Fay, F. Willis .....	Columbus .....	Franklin.
Glover, Sioux .....	Hilliard .....	Franklin.
Keffer, Frederic .....	Cleveland.....	Cuyahoga.
Linson, Irvin. ....	Yellow Springs .....	Greene.
Wilgus, Horace L.....	Conover ..	Miami.
Warner, Cora .....	Chillicothe.....	Ross.

## JUNIOR CLASS.

Ackerman, Fremont .....	Columbus .....	Franklin.
Bradford, Joseph N.....	Columbus .....	Franklin.
Brotherton, William .....	Cedarville .....	Greene.
Dun, George W.....	Dublin .....	Franklin.
Dun, John G.....	Dublin .....	Franklin.
Galbraith, John H.....	Columbus .....	Franklin.
Higbee, Charles E.....	Cleveland .....	Cuyahoga.
Keyser, Isaac N.....	Columbiana.....	Columbiana.
Knopf, George.....	Columbus .....	Franklin.
Lovejoy, Jesse R.....	Columbus .....	Franklin.
Marvin, C. Frederic.....	Columbus .....	Franklin.
McDowell, John A.....	Columbus .....	Franklin.
Miller, Charles C.....	Baltimore .....	Fairfield.
Swickard, Belle.....	Columbus .....	Franklin.
VanHarlingen, E. M.....	Columbus .....	Franklin.
Vanderburg, Charles R.....	Columbus .....	Franklin.
Wilson, Stonewall J.....	Clarksburg, W. Va.....	.....

## SOPHOMORE CLASS.

Ackerman, Eli O.....	Columbus .....	Franklin.
Allen, Horace .....	Troy .....	Miami.
Anderson, James T.....	Columbus .....	Franklin.
Chamberlain, Helena W.....	Yellow Springs.....	Greene.
Gaskill, David L.....	Greenville.....	Darke.
Green, Clarence C.....	Middleport .....	Meigs.
Hine, Lucius A.....	Milan .....	Erie.
Malone, William R.....	Conneaut.....	Ashtabula.
Mix, Melvin N.....	Avenue .....	Franklin.
Orton, Edward, Jr.....	Columbus .....	Franklin.
Sabine, Annie W.....	Richwood .....	Union.
Wikoff, John B.....	Columbus .....	Franklin.

## REGULAR STUDENTS—Continued.

Name.	Residence.	County.
FRESHMAN CLASS.		
Benedict, Edward .....	Dayton .....	Montgomery.
Eisenlohr, Berthold A. ....	Dallas, Texas .....	.....
Erskine, John G. ....	Lowellville .....	Mahoning.
Harrison, William H. ....	Columbus .....	Franklin.
Liggett, William K. ....	Marysville .....	Union.
Lindenberg, Louis B. ....	Columbus .....	Franklin.
Mackey, Denver .....	Sandusky .....	Erie.
Marple, Charles A. ....	Columbus .....	Franklin.
Marquardt, Jesse C. ....	Tiffin .....	Seneca.
McNair, Anna .....	Yellow Springs .....	Greene.
Miller, C. William .....	Columbus .....	Franklin.
Milligan, J. Porter .....	Rushville .....	Fairfield.
Paine, Elmer E. ....	Xenia .....	Greene.
Peters, William L. ....	Columbus .....	Franklin.
Pleukharp, Charles V. ....	Columbus .....	Franklin.
Pomerene, William R. ....	Coshocton .....	Coshocton.
Terry, Harry K. ....	Columbus .....	Franklin.
Twiss, George R. ....	Columbus .....	Franklin.
Wall, Frank T. ....	Marysville .....	Union.
Williams, Paul S. ....	Scioto Furnace .....	Scioto.

## SPECIAL STUDENTS.

Name.	Residence.	County.
Bird, Minnie E. ....	Zanesville .....	Muskingum.
Casey, J. Sheafe .....	Evansville, Ind. ....	.....
Downerd, Edward C. ....	Zanesville .....	Muskingum.
Fitch, Eliza D. ....	Columbus .....	Franklin.
Heinlein, Andrew J. ....	Bridgeport .....	Belmont.
Hughes, Frank W. ....	Columbus .....	Franklin.
Miller, Walter M. ....	Portsmouth .....	Scioto.
Moore, Alvin A. ....	Kenton .....	Hardin.
Smith, Philo C. ....	Canton .....	Stark.
Smith, Sarah A. ....	Canton .....	Stark.
Sparks, Ed. E. ....	London .....	Madison.
Streeper, Jacob D. ....	Chillicothe .....	Ross.
Streeper, Alice B. ....	Chillicothe .....	Ross.
Sweeney, Thomas D. ....	Covington .....	Miami.
Tallmadge, Theodore .....	Columbus .....	Franklin.
Ward, J. Homer .....	Sandusky .....	Erie.



## PREPARATORY STUDENTS.

Name.	Residence.	County.
SECOND YEAR.		
Allcott, Frank L.....	Columbus.....	Franklin.
Armstrong, Philip D.....	Tippecanoe City.....	Miami.
Beatty, George W.....	Columbus .....	Franklin.
Carroll, Clara.....	St. Clairsville .....	Belmont.
Clark, James S.....	Deersville.....	Harrison.
Comly, Guy S. ....	Columbus.. ..	Franklin.
Converse, Edward J.....	Columbus.. ..	Franklin.
Cunningham, George S.....	Lancaster .....	Fairfield.
DeFord, Alonzo F.....	Carrollton.....	Carroll.
Devol, Laura.....	Marietta.....	Washington.
Dowsett, Edward.....	Honolulu, Sandwich Islands.....	.....
Dozer, Martin T .....	Deavertown .....	Morgan.
Frazee, William D.....	Pyrmont .....	Montgomery.
Gilbert, Newton W.....	Angola, Ind.....	.....
Heilman, William T.....	Campbellstown .....	Preble.
Hill, Frank E.....	Neville.....	Clermont.
Houston, Fred.....	Marysville.....	Union.
Howard, Horton.....	Alton.....	Franklin.
Jeffries, May A .....	Mifflinville.....	Franklin.
McKinney, William H.....	Morrow .....	Warren.
Merion, James E.....	Columbus .....	Franklin.
Oxer, Orange E.....	Campbellstown .....	Preble.
Pfaff, Carl P.....	Columbus .....	Franklin.
Pixley, Frank S.....	West Richfield.....	Summit.
Sabine, Wallace C.....	Richwood .....	Union.
Schroll, Otto.....	Columbus .....	Franklin.
Scott, Anna N.....	Columbus .....	Franklin.
Scott, May Mermod .....	Columbus .....	Franklin.
Scott, Winfield.....	Columbus.....	Franklin.
Sexton, Maggie.....	Columbus.. ..	Franklin.
Sneperd, Jacob L.....	Osborne .....	Greene.
Shoemaker, William .....	Tarlton.....	Pickaway.
Stockwell, Harry L....	Columbus.....	Franklin.
Thompson, Howard N.....	Columbus .....	Franklin.
Watt, Sern P.....	Jamestown, Neb.....	.....

## FIRST YEAR.

Adel, E. E.....	Groveport .....	Franklin.
Ballou, Harry A.....	Columbus .....	Franklin.
Bixler, William I.....	Pyrmont .....	Montgomery.
Blankner, Fred., Jr.....	Columbus ..	Franklin.
Bromley, Robert A.....	Columbus .....	Franklin.
Carlin, Wm. E.....	Columbus .....	Franklin.
Cathcart, Josie.....	Columbus .....	Franklin.
Chapman, Harry S.....	Utica.....	Licking.
Colvin, Darwin H.....	Pittsburgh, Pa .....	.....
Converse, H. Penn.....	Columbus .....	Franklin.
Cook, Cora .....	Harlem .....	Delaware.
Cook, Daniel R.....	Parkersburg, W. Va.....	.....
Cornfield, Charles .....	Columbus .....	Franklin.
Cupp, Frank.....	Columbus .....	Franklin.
Doney, A. L.....	Fairmount, Ill.....	.....
Dougherty, Ida.....	Columbus .....	Franklin.

## PREPARATORY STUDENTS—Continued.

Name.	Residence.	County.
FIRST YEAR—Continued.		
Erskine, James H.....	Lowellville .....	Mahoning.
Fawcett, Joseph M.....	Carrollton .....	Carroll.
Fawcett, Wm. C.....	Kilgore .....	Carroll.
Fickell, Isaac H.....	Hilliard .....	Franklin.
Firestone, Joseph F.....	Canton .....	Stark.
Fritchey, Frank L.....	Columbus .....	Franklin.
Gordon, John L.....	Worthington.....	Franklin.
Haig, James .....	Columbus.....	Franklin.
Hamilton, Thomas B.....	Columbus.....	Franklin.
Harmon, Maud .....	Columbus.....	Franklin.
Herd, Joseph E.....	Clintonville .....	Franklin.
Hodder, Thomas H.....	Columbus.....	Franklin.
Holton, Edward E.....	Columbus.....	Franklin.
Hoover, Ellis A.....	West Milton .....	Miami.
Hunter, William C.....	Columbus.....	Franklin.
Keifer, William W.....	Springfield.....	Clarke.
LaDow, Jesse E .....	Plymouth .....	Richland.
Lane, Charles L .....	Point Isabel .....	Clermont.
Laughlin, Charles C.....	Love City.....	Guernsey.
Lacey, John O .....	River Styx.....	Medina.
Lilley, Walter T .....	Columbus.....	Franklin.
Longsdorf, William O.....	Columbus.....	Franklin.
Lowman, Ellsworth M .....	West Alexandria.....	Preble.
Madden, Harry P.....	Mutual .....	Champaign.
Martin, Cyrus B.....	Columbus.....	Franklin.
Martin, Franz S.....	Bloomville .....	Seneca.
Martin, Frank W .....	Bloomville ..	Seneca.
McKee, Caleb L.....	Columbus.....	Franklin.
Miller, Frank.....	Crestline .....	Crawford.
Minton, Henry M.....	Bowling Green.....	Wood.
Morrison, Clarence.....	Columbus .....	Franklin.
Mullay, Annie F.....	Columbus .....	Franklin.
Myers, Joseph.....	Columbus .....	Franklin.
Myers, Uriah H.....	Columbus .....	Franklin.
Nauman, William H.....	Dayton .....	Montgomery.
Neil, Flora.....	Columbus .....	Franklin.
O'Harra, Arthur.....	Columbus .....	Franklin.
Osborn, William F.....	North Jackson.....	Mahoning.
Oviatt, Truman D.....	West Richfield.....	Summit.
Peasley, Hattie A.....	Flint .....	Delaware.
Pegg, Elmer .....	Clintonville .....	Franklin.
Rippey, Thresher A.....	Columbus .....	Franklin.
Scheibell, William O.....	Columbus .....	Franklin.
Sharp, John C.....	Cadiz .....	Harrison.
Shattuck, Fred.....	Columbus .....	Franklin.
Smith, Charles P.....	Clintonville .....	Franklin.
Smith, Hattie L.....	Columbus .....	Franklin.
Springer, Lorin C .....	Shanes Crossings.....	Mercer.
Tiffany, Ettie.....	Lewis Centre .....	Delaware.
Welsh, Enmet A .....	Deersville .....	Harrison.
Welsh, Pinkney M.....	Deersville.....	Harrison.
Woods, Horace A.....	Chilo .....	Clermont.

## UNCLASSIFIED STUDENTS.

Name.	Residence.	County.
Albaugh, Clarence M .....	Covington .....	Miami.
Allen, Charles.....	Washington C. H .....	Fayette.
Allen, Frank M.....	Washington C. H .....	Fayette.
Amy, Charles S.....	Payne's Corners.....	Trumbull.
Applegate, Charles R.....	Beverly.....	Washington.
Ashinger, Frank C.....	Upshur.....	Preble.
Ballard, James O.....	Tarlton .....	Pickaway.
Beach, Charles M.....	Kelloggsville.....	Ashtabula.
Bell, Lillian .....	Columbus .....	Franklin.
Boggs, Edward.....	Chattanooga, Tenn .....	.....
Braun, Charles L .....	Columbus .....	Franklin.
Brundage, F. E.....	Melmore.....	Seneca.
Calderhead, James A .....	Limaville .....	Stark.
Clime, Willard B .....	Avenue .....	Franklin.
Conaway, John W.....	Arcadia .....	Hancock.
Cooley, Arthur S .....	Dover Centre .....	Cuyahoga.
Cook, Luella Z.....	Clintonville.....	Franklin.
Cook, Russell P.....	Chillicothe .....	Ross.
Courtright, Theodore E.....	Lithopolis .....	Fairfield.
Cramblet, Thomas E.....	Deersville .....	Harrison.
Cranz, Lewis C.....	Everett .....	Summit.
Crumley, Clarence M.....	Lancaster .....	Fairfield.
Davis, Charles A.....	Columbus .....	Franklin.
Denver, James W.....	Wilmington.....	Clinton.
Devol, Selden S.....	Marietta.....	Washington.
Devol, William S.....	Marietta.....	Washington.
Dickey, Marcus C.....	Central College .....	Franklin.
Dunbar, Ernest A.....	Ashtabula .....	Ashtabula.
Dun, Davis.....	Dublin .....	Franklin.
Duncan, Jennie.....	Columbus.....	Franklin.
Eastman, J. Coates.....	West Alexandria.....	Preble.
Esterley, Charles E .....	Columbiana.....	Columbiana.
Floyd, Stephen E.....	Wintersville .....	Jefferson.
Glover, Libbie.....	Hilliard .....	Franklin.
Green, William J .....	Granger .....	Medina.
Hahn, Irvin A.....	North Lima.....	Mahoning.
Hanson, George .....	Bradford, England .....	.....
Haseltine, Edward D.....	Haselton .....	Mahoning.
Haskins, C. N .....	Columbus.....	Franklin.
Heinlein, Andrew J.....	Bridgeport.....	Belmont.
Heinlein, Charles.....	Bridgeport.....	Belmont.
Hirst, Charles .....	Columbus.....	Franklin.
House, William D.....	Columbus.....	Franklin.
Howells, E. Stanton.....	Massillon .....	Stark.
Hull, Alice .....	Columbus.....	Franklin.
Huston, Robert T.....	West Alexandria.....	Preble.
Jackson, John .....	Vevay, Ind.....	.....
Keifer, J. Warren, Jr .....	Springfield.....	Clarke.
Kelsey, Milton.....	Hebron.....	Licking.
Kenney, Melvin P.....	Isle St. George .....	Ottawa.
Kiger, William L .....	Lancaster.....	Fairfield.
Kinnear, Edward F.....	Columbus .....	Franklin.
Kridler, William H .....	Columbiana.....	Columbiana.
Lehner, Emma .....	Mifflinville .....	Franklin.
Lewis, John T .....	Ashtabula .....	Ashtabula.
Lovejoy, Ellis.....	Columbus .....	Franklin.
McClain, John A.....	West Lafayette .....	Coshocton.
Mead, Clint. V.....	Jefferson .....	Ashtabula.
Miller, Samuel.....	Canton .....	Stark.

## UNCLASSIFIED STUDENTS—Continued.

Name.	Residence.	County.
Mills, Stephen A.....	Washington C. H.....	Fayette.
Mills, John W.....	West Alexandria.....	Preble.
Mills, Wm. C.....	Pyrmont.....	Montgomery.
Morgan, Reuben D.....	Cleveland .....	Cuyahoga.
Morton, George L.....	South Newburg.....	Geauga.
Morton, James W.....	Mt. Ephraim.....	Noble.
Mullay, Thomas H.....	Columbus .....	Franklin.
Munsey, William C.....	Columbus .....	Franklin.
Negelspach, Otto.....	Millersburg.....	Holmes.
Neil, William.....	Columbus .....	Franklin.
Paiste, Harry P.....	West Chester, Pa .....	.....
Perkins, Thomas P.....	New Moscow .....	Coshocton.
Pleukharp, Ella.....	Columbus .....	Franklin.
Reichenbach, Emanuel.....	Apple Creek.....	Wayne.
Reeves, Bernard J.....	Indianapolis, Ind.....	.....
Richards, John W .....	Columbus .....	Franklin.
Riser, Henry E. ....	Columbus .....	Franklin.
Root, Willis J.....	Andover .....	Ashtabula.
Sawyer, D. W. C., jr.....	Columbus .....	Franklin.
Schaaf, John C .....	Delaware .....	Delaware.
Scott, Minnie O.....	Columbus .....	Franklin.
Seegel, Frank A .....	Kalida.....	Putnam.
Selby, Augustine D.....	Bartlett.....	Washington.
Shedd, William.....	Columbus .....	Franklin.
Shoemaker, Mrs. W. A.....	Columbus .....	Franklin.
Silcott, James E.....	Washington C. H.....	Fayette.
Smith, Charles M.....	Sidney .....	Shelby.
Snyder, David F.....	Springfield .....	Clarke.
Spurgeon, Hattie .....	Clintonville.....	Franklin.
Stewart, Harlon L.....	Norwalk .....	Huron.
Taylor, Joseph R.....	Columbus .....	Franklin.
Taylor Frank A.....	Columbus .....	Franklin.
Thompson, Charles H.....	Oregon .....	Warren.
Wade, Julia .....	Columbus .....	Franklin.
Wade, William .....	Columbus .....	Franklin.
Warner, Julia B.....	Marietta .....	Washington.
Warner, Carrie E.....	Marietta .....	Washington.
Wells, George M.....	Cleveland .....	Cuyahoga.
Wilson, Roger C.....	Georgetown.....	Brown.
Witt, Stella.....	Columbus .....	Franklin.
Wonders, James C.....	Zanesfield .....	Logan.

## TREASURER'S REPORT.

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COLUMBUS, OHIO, *November 15, 1881.*

HON. JAS. B. JAMISON, *President of the Board of Trustees of the Ohio State University:*

DEAR SIR: I hand you herewith my eleventh annual report of the financial transactions of the Ohio State University, for the fiscal year ending this day.

This report, the same as that of last year, embraces —

I. A general cash statement, showing the receipts, expenditures, and balances of cash.

II. The cash transactions pertaining to the sale of the Virginia Military Lands from 1871 to date.

III. A statement showing the condition of the Endowment Fund, held by the State of Ohio, and pledged to the support and maintenance of the Ohio State University.

IV. A full statement of the cash received from whatever source into my hands.

V. A detailed account of disbursements during the year.

Your attention is called to the statement of the Virginia Military Land account, showing a net balance of receipts to date amounting to \$8,433.35, which sum is due to the Endowment Fund, and which, it is respectfully suggested, should be certified into the State Treasury unless authority shall be conferred by the General Assembly for a different use of the income from this source.

All of which is respectfully submitted.

HENRY S. BABBITT, *Treasurer.*

### STATEMENT I.

A GENERAL STATEMENT OF CASH ACCOUNTS FOR THE FISCAL YEAR ENDING NOVEMBER  
15, 1881.

HENRY S. BABBITT, *Treasurer, in account with the Ohio State University:*

DR.

Nov. 16, 1880.	To balance of cash on hand.....	\$3,098 22
	To cash from the following sources, viz.:	
	From State Treasury on account of	
	the income of the Endowment	
	Fund, balance of sum, accrued in	
	1880.....	\$21,445 00

On account of \$33,922.67, due from

same source in 1881.....	\$6,961 33	
	<hr/>	\$28,406 33

From students' term bills:

Winter term, 1880-81.....	\$1,318 25	
Spring term, 1881.....	1,130 00	
Fall term, 1881.....	1,620 00	
Miscellaneous items.....	5 35	
	<hr/>	\$4,073 60

From proceeds of notes received for

sale of Virginia Military Lands...	\$3,243 08	
Interest on such notes.....	463 35	
Sale of Virginia Military Lands.....	3,656 97	
	<hr/>	\$7,363 40

From rent of houses:

President Orton .....	\$280 00	
Professor Townshend .....	300 00	
Professor Derby.....	20 00	
	<hr/>	\$600 00

From miscellaneous sources, to wit:

Prof. S. A. Norton, chemicals, &c., to students .....	\$241 42	
T. E. Miller collected from tres- passer.....	2 00	
From C. E. Thorne, farm manager, to reimburse funds advanced to farm committee .....	650 00	
	<hr/>	\$893 42

From State Treasury, appropriations, viz.:

For expenses of Trustees.....	\$350 00	
" ordinary repairs.....	303 93	
" supplies to mining department	413 40	
	<hr/>	\$1,067 33

Total receipts during the year.....	<hr/>	\$42,404 08
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Total receipts, including above balance .....	<hr/>	\$45,502 30
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#### CONTRA, CR.

Nov. 15, 1881. By expenditures as follows (for items see detailed statement).

For support and maintenance of the University, viz.:

For salaries of faculty, teachers, assistants, other officials and regular employes.....	\$28,050 16	
For expenses of trustees.....	446 80	
For fire-insurance.....	711 00	
For other current expenses.....	3,008 72	
	<hr/>	\$32,216 68

For furniture and apparatus not included in department supplies.....	\$484 61	
For library.....	428 73	
For farm and lawn expenses .....	881 60	
For improvements.....	316 78	
For repairs.....	1,186 72	
For University band.....	55 00	
For department supplies.....	1,878 35	
	<hr/>	\$5,231 79
For expenses of Virginia Military Lands.....		3,991 48
		<hr/>
Total disbursements for the year.....		\$41,439 95
Balance of cash on hand this day.....		4,062 35
		<hr/>
Total receipts this year, including cash on hand November 15, 1880		\$45,502 30
It is estimated that the expenditures for the ensuing fiscal year will be,		
for current expenses.. .....		\$33,000 00
For other expenses and supplies.....		5,000 00
		<hr/>
Total .....		\$38,000 00

This estimate does not include any special expenditures that may be made by authority of, and out of appropriations that may be made by the General Assembly of Ohio.

## STATEMENT II.

## VIRGINIA MILITARY LAND SALES.

The cash receipts into the treasury from the proceeds of the sales of these lands, as reported to November 15, 1880, were.....	\$31,424 45
Receipts during fiscal year 1881.....	*7,363 40
	<hr/>
Total receipts to November 15, 1881.....	\$38,787 85
Total expenses on this account to November 15, 1880, as per report for last year.....	\$14,289 74
Expenses in 1881 .....	3,991 48
	<hr/>
Total expenses to November 15, 1881.....	\$18,281 22
	<hr/>
Balance, showing net receipts to November 15, 1881.....	\$20,506 63
Of this amount, the net receipts to November 15, 1879, were paid into the State Treasury to the credit of the Endowment Fund, as required by law, June 29, 1880.....	\$12,673 28
	<hr/>
Leaving the net proceeds for the past two years, subject to the direction of the Board, for payment into the State Treasury.....	\$8,433 35

\* Note.—The figures on page 12 of this report did not include the full year.

## STATEMENT III.

SHOWING THE AMOUNT OF THE OHIO STATE UNIVERSITY ENDOWMENT FUND, COMPUTED IN ACCORDANCE WITH THE PROVISIONS OF THE ACT PASSED FEBRUARY 10, 1870. (Revised Statutes, Sec. 8446.)

Amount of fund as principal Jan. 1, 1881, (exclusive of bonds of Franklin county, for \$34,500) .....			\$525,127 89
Add interest on same for six months, to July 1, 1881, @ 6 per cent. per annum.....		\$15,753 84	
Add amounts paid in the State treasury by the Treasurer of Franklin county, to comply with the provisions of act of January 20, 1871, as follows:			
Feb'y 3, 1881, \$3,000 and accrued interest .....	\$78 75		
Mar. 12, " 6,500 " " .....	227 50		
Mar. 14, " 25,000 " " .....	855 55		
Totals ... \$34,500 " " .....	\$1,161 80	35,661 80	
Add, also, interest on the above sums from their respective dates July 1, 1881, @ 6 per cent. per annum, viz.:			
\$3,078 75 for 4 months and 28 days .....	\$75 96		
6,727 50 for 3 months and 18 days .....	121 10		
25,855 55 for 3 months and 16 days .....	456 78	653 84	
Total additions first half year.....			52,069 48
Making a total of .....			\$577,197 37
From which is to be deducted the payments made by the State from the income of the fund, since last report, as follows, viz.:			
Nov. 22, 1880, \$2,500, with interest to July 1, 1881, 7 mos., 8 days...	\$90 83		
Dec. 1, 1880, 2,500, " " 7 " ...	87 50		
" 31, 1880, 1,445, " " 6 " ...	43 35		
Jan. 22, 1881, 3,000, " " 5 " 8 days...	79 00		
Mar. 31, 1881, 3,000, " " 3 " ...	45 00		
Apr. 15, 1881, 3,000, " " 2 " 15 days...	37 50		
May 31, 1881, 3,000, " " 1 " ...	15 00		
June 15, 1881, 3,000 " " 0 " 15 days...	7 50		
	\$21,445	\$405 68	
Total deductions first half year.....			21,850 68
Leaving amount of new principal July 1, 1881.....			\$555,346 69
Amount of principal July 1, 1881.....			\$555,346 69
Upon this sum, interest at the rate of six per cent. per annum, compounded semi-annually on the first of January and July, is payable by the State to the University, under the provisions of sections 8433 and 8446, of the Revised Statutes.			



The annual interest charge upon this sum for the year 1881-82, will amount to..... 33,320 80

Heretofore the interest has been computed by the Auditor of State up to the first of January following the close of the fiscal year, and the account is thus complicated by the necessity of treating with two different financial periods; the calculation this year is made to July 1, 1881, only; hereafter it can be made January and July of each year, and the element of uncertainty will be avoided.

Requisitions were made by the Commissioners of the Sinking Fund for the interest accumulations to July 1, 1881, to the amount of \$16,961.33. Of this sum there has been drawn from the State treasury the following sums, to wit:

August 10, 1881, the sum of .....	\$1,961 33
October 6, " " .....	2,500 00
Nov. 15, " " .....	2,500 00
<hr/>	
Total.....	<u><u>\$6,961 33</u></u>

Section 7 of the organic act, passed by the Legislature of Ohio, May 1, 1878, requires a list of "the number of professors, officers, teachers and other employes, and the position and compensation of each," to be reported annually.

The following is the roster, with salaries attached, at this date:

Walter Q. Scott, President.....	\$2,750 00
Edward Orton, Professor.....	2,250 00
S. A. Norton, " .....	2,250 00
Norton S. Townshend, Professor .....	2,250 00
R. W. McFarland, " .....	2,250 00
Albert H. Tuttle, " .....	2,250 00
S. W. Robinson, " .....	2,250 00
T. C. Mendenhall, " .....	2,250 00
Nat. W. Lord, " (conditional) .....	2,000 00
John T. Short, " .....	1,800 00
S. C. Derby, " .....	1,600 00
Wm. R. Lazenby, " .....	2,000 00
George Ruhlen, " (military) .....	500 00
Wm. A. Mason, Assistant Professor .....	1,200 00
Alice Williams, Instructor.....	800 00
Albert Allen, Secretary.....	1,200 00
H. S. Babbitt, Treasurer .....	400 00
Belle Swickard, Assistant Librarian .....	125 00
M. Dillon, Janitor.....	1,000 00
Jas. P. Milligan, Clerk to President, per year .....	75 00

C. C. Miller, Ass't Teacher, Latin and Greek.....	100 00
Belle Swickard, " " .....	100 00
D. O'Brien, " Chemical Lab.....	150 00
Newton M. Anderson, Ass't Teacher, Dep't of Zoology .....	.....
W. R. Cherryholmes, " " Physics .....	.....

## APPROPRIATIONS.

SECRETARY'S OFFICE, COLUMBUS, O., *October 28, 1881.*

*Dr. Henry S. Babbitt, Treasurer O. S. University:*

DEAR SIR: The following appropriations were made by the Board of Trustees for the fiscal year, 1881, in addition to the appropriation by the General Assembly, as per act of April 18, 1881, (\$33,922.67), for the expenditure of the income from the Endowment Fund, for the support and maintenance of the University, to wit:

Nov. 19, 1880.—Dep't of Physics, to be expended by Prof. Mendenhall .....	\$1,000 00
“ “ Zoology and Comparative Anatomy .....	400 00
“ “ Chemistry (library for).....	100 00
“ “ Latin and Greek.....	100 00
“ “ Geology .....	50 00
“ For College Band.....	25 00
Jan'y 6, 1881.—To pay Dr. Townshend's traveling expenses attending Farmers' Institutes .....	100 00
May 6, “ To purchase chemicals .....	500 00
“ “ To leader of band.....	15 00
“ “ For use of Farm Committee .....	500 00
“ “ purchase of apparatus for Physical Department.....	500 00
June 21, “ advertising.....	200 00
“ “ Library .....	300 00
“ “ Chemical Laboratory supplies .....	300 00
“ “ assistant in Chemical Laboratory.....	150 00
“ “ improvement and material in Mechanical Laboratory..	210 00
“ “ Zoological Dep't supplies .....	200 00
“ “ ventilation in Chemical Department—not to exceed...	125 00
“ “ specimens for Geological Museum.....	50 00
“ “ clerical services in President's room.....	75 00

Respectfully submitted,

ALBERT ALLEN, *Secretary.*

## STATEMENT IV.

SHOWING IN DETAIL THE CASH RECEIPTS FROM ALL SOURCES DURING THE YEAR ENDING  
NOVEMBER 15, 1881, BY HENRY S. BABBITT, TREASURER.

Date.	From whom received, and on what account.	Amount.	Total.
1880.			
Nov. 16	Balance of cash on hand.....		\$3,098 23
22	Samuel W. Brown, Va. Military Land, note.....	\$11 25	
	Daniel Evans, " " .....	18 10	
	Elizabeth Holsinger, " pre-emption .....	10 00	
	Chas. A. Barton, Agt., " sales .....	425 36	
	C. E. Thorne, Farm Manager, reimbursement of money advanced to the Farm Committee .....	650 00	
			1,114 71
	State Treasury, income from endowment. ....		2,500 00
Dec. 1	" " .....		2,500 00
3	W. W. Compton, Va. Military Land, note .....	\$15 00	
	" " interest .....	1 00	
	Winterstein & Cooper, " note .....	33 04	
			49 04
27	A. Kissting, " note .....	\$42 50	
	" " interest .....	3 30	
	Samuel A. Hoffer, " note (bal.)....	25 45	
	Johnson Allen, " sales.....	87 33	
			158 58
30	J. B. Fleming, " note .....	\$80 00	
	Alfred McDaniels, " note .....	5 20	
	" " interest .....	4 80	
	Thomas W. Davis, " note .....	31 40	
	J. F. Miles, " notes, 2 (\$45 and \$81.57) .....	126 57	
	J. F. Miles, Virginia Military Land, interest .....	10 29	
	Chas. A. Barton, " sales.....	159 35	
	President Orton, house-rent November and Dec...	70 00	
			487 61
31	State Treasury, income from endowment .....		1,445 00
1881.			
Jan. 15	Jacob Lowman, Va. Military Land, notes.....	\$35 75	
	Edward Orton, " sales .....	252 00	
			287 75
22	State Treasury, income from endowment.....		3,000 00
31	Samuel Redman, Va. Military Land, note .....	\$13 75	
	" " interest .....	2 75	
	A. & J. P. Newman, " notes .....	113 00	
	Henry W. Russell, " " .....	30 00	
	R. W. McFarland, Bursar, acc't of winter term bills	488 50	
			678 00
Feb. 4	Mary and L. C. Damarin, Va. Mil. Land, notes.....	\$329 94	
	" " interest...	17 39	
			347 33
9	Henry W. Russell, " note .....	\$17 00	
	R. W. McFarland, Bursar, acc't winter term bills ..	720 50	
			737 50
16	John Daugherty, Va. Military Land, note.....	\$10 00	
	John McCoy, " " .....	11 17	
	" " interest.....	89	
	Robert Smith, " note.....	31 65	
	" " interest.....	2 55	
			56 26
25	Chas. A. Barton, " sales .....		199 08
28	" " .....		200 00

## STATEMENT IV.—Continued.

Date.	From whom received, and on what account.	Amount.	Total.
1881.			
March 10	W. M. Stephenson, Va. Military Land, note.....	\$18 00	
	James Porter, " interest.....	1 80	
	Wm. Park, " " .....	2 00	
	President Orton, house rent .....	70 00	
			\$91 80
17	Andrew Behne, jr., Va. Military Land, note (bal.)...	\$91 08	
	" " interest .....	8 34	
			99 42
26	R. W. McFarland, Bursar, bal. winter term fees.....		109 25
31	John Liston, Va. Military Land, note .....	\$20 00	
	J. W. Overturf, for account of amount due from Newman & Simpson on Va. Military Land notes..	12 18	
	Leroy Moss, Va. Mil. Land, note (\$10 and int. 60c)	10 60	
	E. A. Legg, " " .....	60 00	
	Chas. A. Barton, " sales.....	140 00	
			242 78
April 31	State Treasury, income from endowment.....		3,000 00
6	Chas. A. Barton, Va. Mil. Land, sales.....		185 61
14	" " " .....	\$750 00	
	T. E. Miller, trespassing cattle .....	2 00	
	J. W. Purdin, Va. Mil. Land, note.....	200 00	
	" " interest .....	14 10	
			966 10
15	State Treasury, income from endowment.....		3,000 00
20	James Groom, Va. Mil. Land, note.....	\$26 00	
	" " interest.....	2 25	
			28 25
May 11	P. N. Wickerham, bal. due on Va. Mil. Land note, \$17.40 and int., \$2.60, less discount of \$6, allowed on the land.....		14 00
18	G. F. Jarrell, Va. Mil. Land, note.....	\$45 00	
	President Orton, house rent 2 months.....	70 00	
	Sylvester Turner, Va. Mil. Land, notes .....	27 00	
	" " interest .....	5 16	
			147 16
	Geo. Kessinger, " notes (2) .....	\$54 00	
	" " interest .....	10 65	
	J. B. McGraw, " note .....	3 60	
			68 25
26	Prof. N. S. Townshend, house rent 1 year .....	\$300 00	
	David C. Thompson, V. M. Land, note, \$46; int., \$2.75	48 75	
	Wm. G. Beckman, " " .....	70 08	
			418 83
June 31	State Treasury, income from endowment.....		3,000 00
6	Daniel Hux, Va. Mil. Land, note .....	\$20 90	
	" " interest .....	10	
	Isaac Smalley, " " .....	1 75	
	" " note .....	19 00	
	M. D. Hibb, " " .....	68 00	
	" " interest .....	6 25	
	Elizabeth Davis, " 3 notes.....	87 00	
	" " interest .....	6 20	
			209 20
10	W. S. Jones, damage to apparatus.....		5 35
15	State Treasury, income from endowment.....		3,000 00
18	Prof. McFarland, Bursar, spring term fees.....	Incidentals.... \$895 Chem. Lab'y.. 210 Phys'l " .. 14 Stall rent ..... 11	1,130 00

STATEMENT IV.—Continued.

Date.	From whom received, and on what account.		Amount.	Total.
1881.				
June 29	Chas. A. Barton, Va. Mil. Land, sales .....		\$856 27	
	Prof. S. A. Norton, apparatus to students .....		241 42	
	Daniel Hux, bal. due on Va. Mil. Land, note .....		1 93	
				\$1,099 62
July 11	Samuel A. Hoffer, " note .....			25 00
15	Stephen Bond, " " .....			10 00
26	W. S. Hall, " " .....		\$26 00	
	" " interest..		4 68	
				30 68
28	Johnson Allen, " note .....		\$35 33	
	" " interest..		7 48	
	Bettie Allen, " note .....		13 50	
	" " interest..		2 43	
				58 74
Aug. 30	Samuel A. Hoffer, " note .....			52 00
10	State Treasury, income from endowment.....			1,961 33
15	Joseph Hart, Va. Mil. Land, interest.....			1 15
	George C. Bryant, " note.....		\$30 00	
	" " interest.....		15 00	
	Samuel Johnson, " note.....		21 95	
	" " interest.....		2 27	
	Henry Carter, " note.....		33 33	
	" " interest.....		4 17	
	John H. Davis, " note.....		6 34	
	" " interest.....		66	
	Wasson Muter, " " .....		3 00	
				116 72
Sept. 1	M.C. & L.C. Damarin, " note.....		\$11 46	
	" " int. on sundry notes..		60 08	
	F. J. Misler, " note.....		156 66	
	" " interest.....		40 74	
				268 94
23	Satterfield & Barry, " note.....		\$92 20	
	" " interest.....		11 34	
				103 54
Oct. 5	Jarrett Newman, " note.....		\$40 00	
	E. M. West, " note .....	\$17 70		
	" " interest... 2 30		20 00	
	Joseph Panley, " note .....	\$19 00		
	" " interest... 40		19 40	
	Bronson Holton, " interest.....		10 00	
	Jacob Butler, " 1st note.....	\$24 00		
	" " acc't 2d note 10 58		50 00	
	" " int. 5 notes.. 15 42			
				139 40
6	State Treasury, income from endowment.....			2,500 00
8	Isaac Sole, Va. Military Land, note.....		\$35 00	
	J. F. Compton, " note .....	\$22 00		
	" " interest 1 32		25 00	
	" " int. on W.W.Compton's n'ts 1 68			
				60 00
24	Jarrett Newman, Va. Mil. Land, note.....		\$5 00	
	A. W. Yankee, " notes (3).....		147 74	
	" " interest.....		13 01	
	Chas. A. Barton, " note (on acc't).....		100 00	
				265 75

## STATEMENT IV.—(Continued.)

Date.	From whom received, and on what account.	Amount.	Total.
1881.			
Oct 24	Mary J. Reed, 3 notes Va. Mil. Land, \$8.45 each ...	\$25 35	
	“ 1 note “ and bal.....	49 54	
	“ accrued interest on same.....	25 11	
			\$100 00
Nov. 2	S. C. Derby, house rent for October .....	\$20 00	
	R. W. McFarland, Bursar, fall term bills .....	1,620 00	
	Geo. F. Jarrell, Va. Mil. Land, note ..... \$57 50		
	“ “ bal. on ac't 12 34 } ...	84 12	
	“ “ interest... 14 28 }		
	H. W. Russell, “ note .....	4 30	
	Miles P. Thompson, “ note ..... \$50 00		
	“ “ interest... 9 85 } ...	59 85	
			1,788 27
15	State Treasury, income from endowment fund.....		2,500 00
	Joseph Hart, Va. Mil. Land, note .....	\$27 86	
	W. M. Stephenson, “ “ .....	18 00	
	Samuel A. Hoffer, “ “ .....	11 00	
	Abigail Genther, “ note..... \$27 50 )		
	“ “ interest ... 1 62 ) ...	29 12	
	Bronson Holton, “ notes ..... \$70 50 )		
	“ “ interest..... 8 50 ) ...	79 00	
	Erasmus Tucker, “ note..... \$29 62 )		
	“ “ interest..... 2 80 ) ...	32 42	
	James Daugherty, “ note.....	20 24	
	Chas. A. Barton, “ interest (balance).....	99 14	
	“ “ cash sales .....	391 97	
	Edward Orton, house rent in full .....	70 00	
			778 75
	State Treasury, for acc't expenses of Trustees.....	\$350 00	
	“ “ ordinary repairs. ....	303 93	
	“ “ supplies Mining Dep't....	413 40	
			1,067 33
	Total receipts, including balance of \$3,098.22 on hand Nov. 16, 1880.....		\$45,502 30
	Total disbursements during the year (see State- ment V. for details).....		41,439 95
	Balance cash on hand Nov. 15, 1881.....		\$4,062 35

## STATEMENT V.

A DETAILED ACCOUNT OF DISBURSEMENTS, BY HENRY S. BABBITT, TREASURER, DURING  
THE FISCAL YEAR ENDING NOVEMBER 15, 1881.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1880.				
Nov. 19	437	C. A. Barton, agent V. M. lands.....	Salary and expenses.....	\$410 19
	438	Alston Ellis.....	Expenses as Trustee.....	23 00
	439	S. H. Ellis.....	" ".....	11 60
	440	Stephen Johnson.....	" ".....	12 00
	441	T. J. Godfrey.....	" ".....	18 15
24	442	Prof. A. H. Tuttle.....	Salary for November.....	225 00
	443	President Edward Orton.....	" ".....	275 00
	444	Prof. Sidney A. Norton.....	" ".....	225 00
	445	" S. W. Robinson.....	" ".....	225 00
	446	" Josiah R. Smith.....	" ".....	160 00
	447	" Joseph Millikin.....	" ".....	225 00
	448	" Norton S. Townshend.....	" ".....	225 00
	449	" R. W. McFarland.....	" ".....	225 00
	450	" Luigi Lomia.....	" ".....	60 00
	451	" Nat. W. Lord.....	" ".....	130 00
	452	" John T. Short.....	" ".....	160 00
	453	" Wm. A. Mason, Jr.....	" ".....	100 00
	454	" Alice Williams.....	" ".....	65 00
	455	Michael Dillon, janitor.....	" ".....	83 33
27	456	Jas. B. Jamison.....	Expenses as Trustee.....	15 25
30	457	A. D. Rodgers, P.M.....	Postage for President.....	6 00
Dec. 2	458	Thomas Mathew.....	Balance due for materials..	44 00
4	459	Jerry Bresnahan.....	Wages as Lawn-keeper.....	35 00
6	460	P. Hayden.....	Coke.....	8 50
	461	Columbus Fire Department	Filling cisterns.....	50 00
	462	C. J. Wilfing.....	Work in Mech'l Labor'y..	16 95
	463	C. S. Amy.....	" ".....	34 00
	464	F. C. Ashinger.....	Carpentry.....	3 50
	465	Geo. M. Maris & Co.....	Glass for repairs.....	40
	466	N. E. Lovejoy.....	Repairing well.....	9 75
	467	M. J. Lawrence.....	Sub'n to Ohio Farmer.....	3 00
	468	Geo. D. Makepeace.....	Leader of College Band.....	25 00
	469	Rushmer & Irving.....	Repairing gun-carriage.....	10 00
	470	Fred. Keffer, Treas. Horton Literary Society.....	Repairs.....	50 00
	471	Cott & Hann.....	Printing.....	5 50
	472	Nevins & Myers.....	Letter-heads.....	7 25
	473	F. King.....	Painting blackboards.....	5 00
	474	Royce & Pulling.....	Repairing cylinder heads..	20 49
7	475	Columbus Transfer Co.....	Freights.....	2 02
9	476	A. D. Rodgers, P.M.....	Postage for Secretary.....	9 00
22	477	Prof. Win. A. Mason, Jr.....	Salary for December.....	113 33
	478	" A. H. Tuttle.....	" ".....	225 00
	479	" Edward Orton.....	" ".....	275 00
	480	" Sidney A. Norton.....	" ".....	225 00
	481	" Jos. Millikin.....	" ".....	225 00
	482	" N. S. Townshend.....	" ".....	225 00
	483	" R. W. McFarland.....	" ".....	225 00
	484	" Luigi Lomia.....	" ".....	60 00
	485	" S. W. Robinson.....	" ".....	225 00
	486	" J. R. Smith.....	" ".....	160 00
	487	" N. W. Lord.....	" ".....	130 00

## STATEMENT V—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1880.				
Dec. 22	488	Prof. J. T. Short.....	Salary for December.....	\$160 00
	489	" Alice Williams.....	" " .....	65 00
	490	M. Dillon, Janitor.....	" " .....	83 33
	491	Albert Allen, Secretary.....	" " .....	100 00
	492	Sioux Glover.....	" Ass't Librarian.....	25 00
	493	David O'Brine.....	" Tutor.....	50 00
	494	H. L. Wilgus.....	" " .....	25 00
	495	Chas. M. Lewis.....	" " .....	50 00
	496	Strobridge Lithographing Co	Engraving and printing....	152 75
23	497	R. W. McFarland.....	Pd. for labor on wind-mill..	45 00
28	498	A. D. Rodgers, P.M.....	Postage for President.....	10 00
Jan. 4	499	Thos. Fitzgerald.....	Setting gas retorts.....	9 45
1881.	500	Stacy Manufacturing Co....	Gas retort.....	60 50
	501	Miller, Metcalf & Parker....	Mechanical supplies.....	6 35
	502	R. B. Adams.....	Lumber.....	3 45
	503	Columbus Transfer Co.....	Freights.....	11 86
	504	Albert Allen.....	Teleg'h & express charges	3 30
	505	A. H. Smythe.....	Books for Library.....	55 25
	506	S. W. Robinson.....	Supplies Mech. Dep't.....	6 00
	507	Prof. Tuttle.....	" Zoolog. " .....	5 35
	508	Royce & Pulling.....	Repairing cylinders.....	3 75
	509	H. C. McClelland & Co.....	Books for Library.....	9 60
	510	Elliott Jones & Co.....	Stationery.....	4 65
	511	Wm. Taylor.....	Cement.....	1 75
	512	Kilbourne, Jones & Co.....	Department supplies.....	26 09
	513	B. D. Potts.....	Wind-mill fixtures.. .....	133 23
	514	Abbott, Montgomery & Ston'r	Hardware .....	8 66
	515	Lyonsdale Coal Co.....	Coal.....	289 88
	516	Geo. M. Maris & Co.....	Glass .....	1 10
	517	Edward Orton.....	Incidental expenses.....	40 49
	518	Prof. Tuttle.....	Physiolog'l Dep't supplies	214 59
6	519	Alston Ellis.....	Expenses as Trustee.....	15 00
	520	Wm. H. Leete.....	Settlement of V. M. Land case in Franklin Com. Pleas Court.....	2,284 33
	521	Halm, Bellows & Butler...	Table for Phys. Laboratory	60 00
	522	Stephen Johnston.....	Expenses as Trustee.....	11 50
	523	T. J. Godfrey.....	" " .....	19 05
	524	Jas. B. Jamison.....	" " .....	15 00
8	525	Fimes & Amend.....	Supplies Prof. Tuttle's dep't	31 54
	526	S. W. Robinson.....	Appleton's Dic. of Mechs.	14 00
	527	Geo. D. Makepeace.....	Leader of O. S. U. band...	15 00
15	528	Albert Allen, Secretary.....	1 month's salary.....	100 00
20	529	S. H. Ellis.....	Expenses as Trustee.....	39 90
	530	Stephen Johnson.....	" " .....	10 75
	531	Jas. B. Jamison.....	" " .....	14 75
21	532	S. H. Ellis.....	Cartickets for Legis. Com's.	4 00
25	533	Prof. Norton.....	Salary for January.....	225 00
	534	Fred Keffer.....	" as tutor.....	15 00
	535	Prof. Tuttle.....	" for January.....	225 00
	536	" Short.....	" " .....	160 00
	537	" Millikin.....	" " .....	225 00
	538	" Lord .....	" " .....	130 00
	539	President Orton.. .....	" " .....	275 00
	540	Prof. Townshend.....	" " .....	225 00
7		S. U.		



## STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1881.				
Jan. 25	541	Prof. McFarland.....	Salary for January.....	\$225 00
	542	" Robinson .....	" " .....	225 00
	543	" Lomia .....	" " .....	60 00
	544	" Smith .....	" " .....	160 00
	545	" Mason .....	" " .....	120 00
	546	" Williams .....	" " .....	65 00
	547	Michael Dillon .....	" " .....	83 33
Feb'y 28	548	E. E. Lyon.....	Repairing blackboards.....	5 20
5	549	R. W. McFarland.....	Wind mill expenses.....	117 78
7	550	E. B. Armstrong .....	Repairing tank.....	11 70
	551	Columbus Transfer Co.....	Freight .....	15 58
	552	Ed. Hughes.....	Labor .....	20 62
	553	Columbus Telephone Co....	Rent of instruments.....	16 39
	554	Royce & Pulling .....	Steam-pumps .....	102 04
	555	E. R. Kirk .....	Repairing chairs .....	18 25
	556	N. E. Lovejoy .....	Lumber for wind-mill.....	26 14
	557	Comly & Francisco.....	Printing vouchers .....	8 50
	558	Lyonsdale Coal Co .....	182½ tons coal .....	420 56
	559	Wm. Halley .....	Plumbing.....	97 78
	560	Void .....	.....	0 00
	561	S. P. Watt .....	Laboratory work.....	6 36
	562	Hayden & Baker .....	Iron cuttings, Department supplies .....	24 12
	563	Geo. M. Maris & Co .....	Step-ladder, Dep't supplies	2 75
	564	Brown & Sharp Manuf'g Co.	Vitrified wheel, "	4 05
	565	Columbus B. and S. P. Wks..	Flanges, "	3 57
	566	J. K. McDonald .....	Repairing blackboards.....	11 00
	567	Stephen Johnston.. .....	Expenses as Trustee.....	6 75
10	568	Jas. B. Jamison .....	" " .....	12 55
14	569	Albert Allen, Sec'y .....	Salary .....	100 00
16	570	H. S. Babbitt, Treasurer ....	Salary for 3 months .....	100 00
18	571	Prof. Millikin .....	On account of salary .....	125 00
24	572	" McFarland .....	Salary for February .....	225 00
	573	Pres't Orton .....	" " .....	275 00
	574	Prof. Norton .....	" " .....	225 00
	575	" Millikin .....	Balance salary for Feb'y...	100 00
	576	" Townshend .....	Salary for February .....	225 00
	577	" Tuttle .....	" " .....	225 00
	578	" Lomia .....	" " .....	60 00
	579	" Robinson .....	" " .....	225 00
	580	" Smith .....	" " .....	160 00
	581	" Lord .....	" " .....	130 00
	582	" Short .....	" " .....	160 00
	583	" Mason.....	" " .....	120 00
	584	" Alice Williams.....	" " .....	65 00
	585	Michael Dillon.....	Janitor for February.....	83 33
	586	W. S. Jones.....	Ass't in Laboratory ½ term	50 00
28	587	C. M. Lewis.....	Tutor in Languages " "	37 50
28	588	H. L. Wilgus... ..	" Mathematics " "	25 00
March 12	589	Alston Ellis.....	Expenses as Trustee.....	15 00
12	590	Harry Hyatt .....	Ass't in President's room..	25 00
	591	Jerry Bresnahan .....	Work on retorts ....	7 50
	592	E. R. Kirk .....	Carpentry .....	66 95

## STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1881.				
March 12	593	Prof. Tuttle.....	{ Supplies for Physic'l Lab- oratory, \$121.36..... Expenses of dept, \$27.68 Incidentals--current ex- penses, \$19.70.....	\$168 74
	594	Edward Hughes .....	Setting retort .....	10 00
	595	Wassall Fire Clay Co.....	Fire-bricks and clay.....	8 75
	596	Geo. W. Gleason .....	{ Books for Library, \$47.50 { Liquid slating, \$22.14 .....	69 64
	597	Lyonsdale Coal Co.....	60 $\frac{1}{2}$ tons coal.....	139 88
	598	S. E. Samuel & Co.....	Chemicals .....	13 83
	599	Columbus B. and S. P. Wks..	Pump .....	2 50
	600	Nevins & Myers.....	Paper and printing.....	24 05
	601	A. Thompson .....	Wind-mill .....	150 00
	602	Fred. Marvin.....	Work in laboratory.....	11 20
	603	Cumberland Fire Br'k Wks..	Clay retorts.....	53 75
	604	N. Lovejoy & Son.....	Lumber .....	4 05
	605	Edward Orton, President...	{ Farmers' Institute ex- penses, \$17.45..... Library, \$7.50..... Incidentals, \$30.99 .....	55 94
	606	C. S. Amy .....	One night's work.....	1 50
	607	R. W. McFarland .....	Wind-mill expenses.....	11 46
	608	John Shea .....	Supplies for Janitor .....	7 42
	609	A. D. Rodgers, P. M.....	Postage on reports.....	73 80
	610	Prof. Townshend.....	{ Farmer's Inst. ex., \$36.20 { Postage..... 9.93	46 13
	611	Columbus Transfer Co.....	Freights .....	22 39
	612	J. V. Stormay.. .....	Autotypes (art department supplies) .....	13 00
	613	W. H. Ferguson.....	Cabinet, draw'g screen, &c.	61 00
	614	P. Hayden.....	Coal.....	4 50
	615	Wm. Halley.....	Plumbing.....	17 78
	616	Scioto Boiler Works.....	Steam-fitting, (repairs).....	17 20
	617	George D. Makepeace.....	Leader of band.....	15 00
17	618	W. S. Jones.....	Tutor in Physics.....	50 00
	619	David O'Brine .....	" Chemistry.....	75 00
	620	H. L. Wilgus.....	" Mathematics.....	25 00
	621	Miss Sioux Glover.. ..	Librarian .....	37 50
	622	Belle Swickard.....	Ass't in Latin .....	37 50
	623	Fred Keffer.....	" Physics.....	10 00
	624	C. W. Lewis .....	" Latin and Greek..	37 50
22	625	D. B. Schriver.....	2 door springs.....	3 00
25	626	Edward Orton.....	Salary for March.....	275 00
	627	Prof. Norton .....	" .....	225 00
	628	" Lord .....	" .....	130 00
	629	" Millikin .....	" .....	225 00
	630	" Townshend.....	" .....	225 00
	631	" McFarland .....	" .....	225 00
	632	" Tuttle .....	" .....	225 00
	633	" Lomia.....	" .....	60 00
	634	" Robinson.....	" .....	225 00
	635	" Smith .....	" .....	160 00
	636	" Short.....	" .....	160 00
	637	" Mason .....	" .....	120 00

STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1881.				
March 25	638	Prof. Williams .....	Salary for March.....	65 00
	639	Michael Dillon, janitor.....	" .....	83 33
30	640	A. D. Rodgers, Postmaster..	Postage on reports.....	20 00
April 2	641	Alston Ellis.....	Expenses as Trustee.....	16 00
4	642	E. R. Kirk.....	Carpentry .....	19 10
	643	Wm. Halley.....	Plumbing.....	52 67
	644	J. F. Earhart.....	Printing tabs .....	4 00
	645	A. H. Smythe.....	Books for Library .....	60 15
	646	Geo. M. Maris & Co.....	Glass and lead .....	2 00
	647	T. H. Schneider.....	Laboratory supplies.....	4 95
	648	Electric Manufacturing Co..	Electric bells.....	10 80
	649	Ohio Farmer.....	Advertising lectures.....	7 50
	650	City Boiler Works.....	Bal. on engine.....	1 00
	651	Siebert & Lilley. ....	Binding reports .....	12 00
	652	John A. Rea, agent.....	Insurance on Laboratory...	22 50
9	653	Albert Allen, Secretary.....	Salary .....	100 00
11	654	F. Koenig.....	Painting walls in art rooms	38 50
19	655	Fred Keffer.....	Ass't in Physics.....	25 00
27	656	President Orton.....	Salary for April.....	275 00
	657	Prof. Norton .....	" .....	225 00
	658	" Millikin .....	" .....	225 00
	659	" Townshend.....	" .....	225 00
	660	" McFarland .....	" .....	225 00
	661	" Tuttle.....	" .....	225 00
	662	" Louia.....	" .....	60 00
	663	" Robinson.....	" .....	225 00
	664	" Smith .....	" .....	160 00
	665	" Lord .....	" .....	130 00
	666	" Short .....	" .....	160 00
	667	" Mason .....	" .....	120 00
	668	" Williams .....	" .....	65 00
	669	Michael Dillon, janitor.....	" .....	83 33
	670	Prof. N. P. Morgan .....	" .....	150 00
	671	Albert Allen, Secretary.....	Salary to April 15.....	100 00
May 7	672	Stephen Johnston.....	Expenses as Trustee.....	13 50
	673	T. J. Godfrey .....	" .....	16 25
	674	S. H. Ellis.....	" .....	10 30
	675	James B. Jamison.....	" .....	13 50
	676	Alston Ellis.....	" .....	17 00
	677	E. R. Kirk.....	Carpentering .....	9 63
	678	J. K. McDonald.....	Plastering .....	12 00
	679	Royce & Pulling .....	Rubber packing.....	7 85
	680	Washington Townsend.....	2 days' work.....	3 00
	681	Columbus Nursery.....	Trees for campus.....	19 40
	682	Sam'l Shilling.....	Supplies for Mech. Lab....	24 56
	683	Strobridge Lithograph. Co.	Ten diplomas.....	10 00
	684	S. P. Watt .....	Supplies for Mech. Lab....	10 09
	685	Wassell Fire-Clay Co.....	Bricks and clay .....	2 50
	686	Prof. McFarland .....	Paid laborers' wages.....	31 47
	687	Prof. S. A. Norton.....	Chem. Labor'y supplies ...	168 33
	688	C. M. Beach .....	Work in Art room .....	5 40
	689	Clark & Fahey.....	Repairing scales, &c.....	63 19
	690	Prof. N. S. Townshend.. ....	Exp. at Farmers' Institutes	56 30
	691	Stitt, Price & Co. ....	Lime .....	2 50
	692	Lyonsdale Coal Co.....	74½ tons coal.....	171 87
10	693	C. E. Thorne, Farmer.....	Farm expenses .....	500 00

## STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1881.				
May 10	694	Columbus Telephone Co.....	Rent to July 1 .....	\$12 50
14	695	C. M. Lewis.....	Ass't in Lat. & Gr., $\frac{1}{2}$ term	37 50
	696	W. S. Jones.....	" Physics, "	50 00
	697	H. L. Wilgus.....	Services in Pres't's room...	12 50
20	698	A. D. Rodgers, P. M.....	Postage for President.....	7 00
25	699	Prof. Lord .....	Salary for May.....	130 00
	700	" Townsend .....	" .....	225 00
	701	Pres't Orton.....	" .....	275 00
	702	Prof. Norton.....	" .....	225 00
	703	" Millikin .....	" .....	225 00
	704	" McFarland.....	" .....	225 00
	705	" Tuttle .....	" .....	225 00
	706	" Robinson .....	" .....	225 00
	707	" Lomia .....	" .....	60 00
	708	" Smith .....	" .....	160 00
	709	" Short.....	" .....	160 00
	710	" Mason.....	" .....	120 00
	711	" N. P. Morgan .....	" .....	150 00
	712	" Alice Williams.....	" .....	65 00
26	713	Michael Dillon.....	Janitor for May.....	83 33
	714	Albert Allen.....	Sec'y " .....	100 00
June 7	715	Miss Sioux Glover.....	Salary as Librarian.....	37 50
	716	Geo. Rhoades.....	Lawn-keeper .....	26 90
10	717	Alston Ellis. ....	Expenses as Trustee .. ....	16 00
	718	Pres't Orton .....	Pd. for Library .....\$87 43	
			" Geolo. Dep't, 37 83	
			" Curr't Exp., 35 05	
				160 31
	719	John Shea.....	Coal-oil.....	5 00
	720	Nevins & Myers.....	Paper and printing. ....	17 00
	721	Thos. J. Hand .....	A. J. C. C. Reg. for Library	3 75
	722	S. W. Robinson .....	Supplies for Med. Dep't ...	6 30
	723	J. R. Smith .....	Rubber stamps.....	2 16
	724	Prof. Townshend.....	Repairs to residence.....	75 00
	725	Royce & Pulling .....	Bolts for retorts.....	1 40
	726	Karl Walch.....	Flowering-plants.....	14 80
	727	W. S. Jones.....	Asst't in Physics, $\frac{1}{2}$ term...	50 00
11	728	C. M. Lewis.....	" Lat. & Gr., $\frac{1}{2}$ term	37 50
18	729	Prof. Millikin .....	Salary for June .....	225 00
	730	Pres't Orton .....	" .....	275 00
	731	Prof. Norton .....	" .....	225 00
	732	" McFarland .....	" .....	225 00
	733	" Mason.....	" .....	120 00
	734	" Tuttle .....	" .....	225 00
	735	" Townshend.....	" .....	225 00
	736	" Lomia .....	" .....	60 00
	737	" Robinson.....	" .....	225 00
	738	" Smith .....	" .....	160 00
	739	" Lord .....	" .....	130 00
	740	" Short.....	" .....	160 00
	741	" Williams .....	" .....	65 00
	742	Dan'l O'Brine.. ....	Ass't in Chemistry.....	50 00
	743	H. L. Wilgus.....	Services in Pres't's room...	12 50
	744	Prof. McFarland.....	" as Bursar.....	25 00
20	745	M. N. Mix, Treas.....	Tables for art rooms.....	8 00

## STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1881.				
June 22	746	S. H. Ellis.....	Expenses as Trustee.....	\$14 60
24	747	J. B. Jamison .....	"	25 00
	748	Lucius B. Wing .....	"	11 00
	749	T. J. Godfrey .....	"	17 30
	750	Chas. A. Barton.....	Exp's as ag't V. M. Lands..	334 23
	751	Chas. A. Barton.....	7 months' salary as ag't V. M. Lands.....	420 00
25	752	C. F. Marvin.....	Services Mech. Lab'y.....	16 87
	753	R. W. McFarland .....	Superintending lawn .....	25 00
	754	same .....	Expenses of same.....	7 93
	755	S. E. Samuel & Co.....	Alcohol.....	2 55
	756	O. A. B. Senter & Co .....	Paper trays .....	6 00
	757	C. E. Thorne.....	Work on lawn.....	62 62
	758	Belle Swickard.....	Ass't in Latin and Greek...	37 50
	759	Cumberland Firebrick w'ks	2 gas retorts.....	47 50
	760	S. A. Norton .....	Chemicals .....	83 78
27	761	M. Dillon, janitor.....	Salary for June.....	83 33
	762	Prof. A. P. Morgan .....	" .....	150 00
30	763	A. D. Rodgers, P.M.....	Postage for President.....	9 00
July 2	764	Geo. Rhoades.....	Work on lawn.....	33 65
11	765	Harvey Bancroft, agt .....	Fire Insurance.....	92 00
13	766	E. M. Van Harlingen, agt...	" .....	89 50
	767	Wood & Graham, agts.....	" .....	74 00
14	768	John A. Rea, agt.....	" .....	177 50
	769	S. M. Shedd, agt.....	" .....	137 50
16	770	Prof. McFarland.....	Expressage on Telescope..	5 00
18	771	F. Koenig .....	Kalsomining Laboratory...	12 71
19	772	A. D. Rodgers, P. M.....	P. O. stamps .....	25 00
20	773	T. Ewing Miller.....	Expenses as Trustee.....	10 10
	774	Albert Allen, Sec'y.....	Salary to 15th inst.....	200 00
21	775	Sam'l Thompson, agt .....	Fire Insurance.....	13 00
25	776	Columbus Telephone Co....	Rent to Oct 1 .....	12 50
30	777	M. Dillon, janitor .....	Salary for July.....	83 33
August 2	778	Harvey Bancroft, agt .....	Fire Insurance.....	105 00
3	779	Geo. Rhoades.....	Work on lawn .....	30 33
4	780	John McDonald.....	Plastering .....	17 50
	781	Wm. Halley .....	Plumbing.....	19 67
	782	Edward Hughes .....	Setting retorts.....	5 50
	783	Edward Orton .....	Commencement expenses..	5 85
	784	Edward Orton .....	Sundry incidental exp'nses	63 83
	785	Columbus Transfer Co.....	Freights .....	19 73
	786	Siebert & Lilley .....	Pencils, etc .....	3 00
	787	Geo. W. Gleason.....	Programs .....	9 80
	788	Slade & Kelton.....	Lumber .....	80 14
	789	Abbott, Montgomery & Stoner	Hardware dep't supplies...	41 45
	790	A. Clark & Son.....	Telescope .....	325 00
15	791	Henry S. Babbitt, Treas...	6 mos. salary to date \$200 } Paid for postage..... 7 }	207 00
17	792	Albert Allen, Sec'y .....	One month's salary to date	100 00
	793	John Shea .....	Supplies for Janitor .....	46 45
27	794	Columbus Police Com'rs....	Policemen (3) at com- mencement .....	15 00
29	795	M. Dillon, janitor.....	Salary for August .....	83 33
Sept. 1	796	George Rhoades.....	Keeping lawn.....	29 17
	797	S. H. Ellis.....	Expenses as Trustee.....	13 00

## STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1881.				
Sept. 1	798	Jas. B. Jamison .....	Expenses as Trustee.....	\$13 00
	799	Albert Allen, Sec'y.....	On salary .....	50 00
16	800	Lewis Baker .....	Setting retorts, etc.....	92 75
	801	Washington Townsend .....	Attending mason—repairs	36 00
17	802	Wm. A. Mason, Jr.....	Art dep't supplies.....	18 18
19	803	Albert Allen, Sec'y.....	Salary to 15th.....	50 00
22	804	W. & L. E. Gurley.....	Repairing solar attachment	3 00
23	805	Chalmers, Spence & Co.....	Repairs.....	28 80
	806	Patton Manufacturing Co....	Department supplies.....	11 15
	807	Walter Q. Scott, Pres't.....	Salary for September.....	275 00
	808	Prof. Edward Orton.....	" .....	225 00
	809	" S. A. Norton .....	" .....	225 00
	810	" N. S. Townshend.....	" .....	225 00
	811	Prof. R. W. McFarland .....	" .....	225 00
	812	" A. H. Tuttle.....	" .....	225 00
	813	" S. W. Robinson .....	" .....	225 00
	814	" T. C. Mendenhall.....	" .....	225 00
	815	" N. W. Lord .....	" .....	100 00
	816	" J. T. Short .....	" .....	180 00
	817	" S. C. Derby .....	" .....	160 00
	818	" Wm. R. Lazenby .....	" .....	200 00
	819	Lieut. George Ruhlen .....	" .....	50 00
	820	Prof. Wm. A. Mason, Jr ....	" .....	120 00
	821	" Alice K. Williams.....	" .....	65 00
	822	C. M. Beach .....	Attending mason .....	38 50
	823	Michael Dillon, janitor .....	Salary for September .....	83 33
Oct. 1	824	George Rhoades.....	Lawn-keeper .....	32 66
5	825	Wm. A. Hershiser.....	Lumber .....	23 14
	826	S. P. Watt .....	Carpentry .....	95 85
	827	Edwin Alden & Bros .....	Advertising .....	189 50
	828	W. P. Harrison Pump Co....	Pump .....	10 00
	829	Nevins & Myers .....	Circulars .....	28 40
	830	Columbus Transfer Co .....	Freight.....	6 69
	831	McCune, Lonnis & Griswold	Glass .....	1 05
	832	Kelley & Co .....	Plumber's materials, Mech. Lab'y .....	69 16
	833	Slade & Kelton.....	Lumber .....	10 20
	834	Geo. Rhoades.....	3 days' work .....	4 05
	835	Kilbourne, Jones & Co .....	Nails—Mech. Lab'y .....	3 10
	836	C. M. Beach .....	4½ days' work .....	9 63
	837	Wassall Fire Clay Co.....	Bricks and clay .....	45 03
	838	City Boiler Works.....	Repairing boiler .....	15 94
	839	J. & H. Berge .....	Crucibles for Mining dep't	20 00
	840	Albert Allen .....	Supplies for office .....	3 30
	841	Myers & Brickell.....	Advertising.....	5 25
	842	J. K. McDonald .....	Carriage hire .....	5 00
	843	Osborn & Co .....	Repairing carpet .....	17 25
	844	Powell & McDonald.....	Sink, for farmer.....	5 75
	845	Cott & Hann.....	Examination papers.....	3 50
	846	F. Koenig.....	Lumber .....	3 00
	847	Greenwood Machine Co....	Castings for Mech'l Lab'ry	5 70
	848	Wm. Taylor .....	Cement.....	12 35
	849	Prof. A. H. Tuttle .....	Department supplies.....	33 80
	850	Stitt, Price & Co.....	Lime for farmer.....	4 00
	851	R. W. McFarland .....	P'd for care of gates \$10 00	11 80
			Paid for carpentry 1 80	

## STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1881.				
October 5	852	Siebert & Lilley.....	Blank books .....	9 75
	853	J. F. Earhart & Co .....	100 printed postals .....	1 75
8	854	Albert Allen, Secretary.....	Account of salary .....	75 00
	855	Columbus Telephone Co.....	Rent of telephone.....	12 50
22	856	Belle Swickard.....	Assistant Librarian.....	50 00
25	857	Walter Q. Scott, Pres't.....	Salary for October.....	275 00
	858	Edward Orton .....	" " .....	225 00
	859	Sidney A. Norton .....	" " .....	225 00
	860	N. S. Townshend.....	" " .....	225 00
	861	R. W. McFarland .....	" " .....	225 00
26	862	Albert H. Tuttle .....	" " .....	225 00
	863	S. W. Robinson .....	" " .....	225 00
	864	T. C. Mendenhall .....	" " .....	225 00
	865	N. W. Lord .....	" " .....	100 00
	866	John T. Short.....	" " .....	180 00
	867	S. C. Derby .....	" " .....	160 00
	868	Wm. R. Lazenby.....	" " .....	200 00
	869	Lieut. Geo. Ruhlen.....	" " .....	50 00
	870	Wm. A. Mason, Jr .....	" " .....	120 00
	871	Alice Williams.....	" " .....	65 00
	872	Michael Dillon, janitor .....	" " .....	83 33
Nov. 1	873	J. F. Earhart & Co .....	Printing for Horti'c'l Dep't.	12 50
	874	Kilbourne, Jones & Co .....	Supplies " "	3 69
	875	C. T. Pfaff & Co .....	" " "	3 40
	876	W. & L. E. Gurley.....	Repairing compass .....	3 25
	877	R. W. McFarland .....	Department supplies .....	5 45
	878	George Rhoades .....	Care of lawn.....	32 67
	879	Royce & Pulling .....	Repairing mower.....	1 25
	880	Albert H. Tuttle .....	Books, Physiolog'l Library	105 67
	881	Abbott, Montgo'ry & Stoner	Supplies for janitor.. ..	12 11
	882	Columbus Transfer Co.....	Freights .....	14 44
	883	Wm. Halley .....	Sinks in dormitory .....	49 95
	884	Midland Telephone Co .....	Use of telephones, etc.....	39 88
	885	S. E. Samuel & Co.....	Chemicals .....	5 18
	886	J. Porter Milligan.....	Stamps for President .....	10 60
	887	A. H. Symthe .....	Books for library.....	26 12
7	888	Albert Allen.....	Ink and pencils .....	1 90
	889	A. H. Tuttle .....	Laboratory supplies .....	157 17
	890	Adams Express Co.....	Express on apparatus .....	5 80
	891	Lyonsdale Coal Co .....	164½ tons coal.....	391 92
	892	C. R. Vanderburg .....	Repairs at dormitory .....	10 00
	893	Comly, Francisco & Co .....	Advertising.....	4 50
	894	Wm. Halley .....	Plumbing in Chemi'l Dep't.	40 05
	895	Kauffman, Lattimer & Ris-	Supplies for Physical Lab-	
		ing .....	oratory .....	37 04
	896	Kilbourne, Jones & Co .....	same .....	38 05
	897	C. F. Marvin.....	Labor .....	3 00
9	898	H. S. Babbitt.....	3 months' salary ... \$100 00	
			Postage..... 3 00	103 00
	899	Albert Allen.....	Salary .....	125 00
	900	A. H. Smythe.....	Books for library.....	9 60
11	901	Chas. A. Barton, agt. V. M.	Six months' salary. \$300 00	
		Lands .....	Expenses .....	242 73
		Total disbursements .....		\$41,439 95

Total receipts as per statement IV.....	\$45,502 80
Total disbursements as above.....	41,439 95

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Balance of cash on hand this day .....	\$4,062 35
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HENRY S. BABBITT,  
*Treasurer, Ohio State University.*

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COLUMBUS, O., November 11, 1881.

*To the Board of Trustees of the Ohio State University:*

Your committee to whom was referred the report of the Treasurer, with vouchers, would report that we have examined the same in connection with the certificates and orders of the Secretary, and they are hereby approved.

Very respectfully,

T. J. GODFREY,

S. H. ELLIS,

*Finance Committee.*



## FARM DEPARTMENT.

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### REPORT OF FARM COMMITTEE.

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*To the Board of Trustees of the Ohio State University:*

Your Farm Committee report that the unexpended balance of appropriations in the hands of the committee at the beginning of the past year has been expended, as will more fully appear in the report of the Farm Manager, herewith submitted.

The accounts and vouchers of the Farm Manager have been compared, and are found correct.

On the 1st of October, Mr. Charles E. Thorne, who had asked to be released that he might accept a very desirable and influential position on the editorial staff of one of our most widely circulated agricultural papers, left the employ of the University.

The Committee sets a high estimate on Mr. Thorne's fidelity, intelligence and business qualities, and they recognize the fact that his administration of the University farm has been a source of strength to the institution.

The experimental work done on the farm the past year has been highly satisfactory, and we recommend that the Board make every reasonable effort for appropriations to enable the Committee to make the farm more exclusively experimental.

J. B. JAMISON,  
S. H. ELLIS,  
T. J. GODFREY,  
*Farm Committee.*

### REPORT OF FARM MANAGER.

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*Hon. James B. Jamison, Chairman Farm Committee, Ohio State University:*

DEAR SIR: I herewith submit my Fourth Annual Report of the operations of the Farm Department of the Ohio State University, the same being for the year ending October 31, 1881.

The season of 1881 has been marked throughout the larger portion of the United States by a drouth, almost unprecedented in its extent and duration, the effect of which, on this farm, has been to materially shorten our crops of corn, late pasturage and vegetables; while our wheat yield has been lowered from an average of twenty-seven bushels per acre for the four previous seasons, to less than twenty bushels for this season, owing to the unfavorable conditions for seeding caused by the drouth of the fall of 1880. The cost of producing and harvesting these inferior crops has, moreover,

been materially increased by the advance in the price of labor, due to the competition engendered by the activity in other lines of business. These causes combined will prevent the showing of any great pecuniary profit from the agricultural operations of the year.

In the following statement ("A,") is given an epitome of all the transactions of this department for the year. In this statement the first and last columns are respectively the inventories of plant on hand at the beginning and end of the year; the second column shows the entire expenditures, and the fifth column the total sales of the year; the third column gives the total production of the farm, and the fourth column the total consumption of farm produce, labor and expense in the production of the results shown in the third, fifth and sixth columns, including the depreciation in value of live stock and implements.

STATEMENT. "A".

SHOWING THE PLANT ON HAND AT THE BEGINNING AND END OF THE YEAR, WITH THE PURCHASES, SALES, PRODUCTION AND CONSUMPTION OF THE INTERIM.

ITEM.	On hand Nov. 1, 1880.		Bought during the year.		Produced or increased in value.		Consumed or decreased in value.		Sold during the year.		On hand Oct. 31, 1881.	
	Number or Amount.	Value.	Number or Amount.	Value.	Acres.	Number or Amount.	Value.	Number or Amount.	Value.	Number or Amount.	Value.	Number or Amount.
Horses .....	10	\$885 00	1	\$125 00			\$125 00		\$155 00	1	\$25 00	10
Hogs .....	49	374 00	1	12 10			245 79			50	631 00	
Cattle .....	47	2,416 50	15	718 75		17	618 74		75 06	29	721 94	50
Implements.....		2,027 40		180 27					41 67			
Corn.....	2,000 bus.	700 00	528½ bus.	727 62	27	1,600 bus.	800 00	2,121½ bus.	769 89	78½ bus.	30 11	1400 bus.
Wheat .....					36	677 "	1,068 28			1,122 "	1,670 65	(1) 83½ "
Oats.....	57 bus.	17 10			2	40 "	20 00	57 bus.	17 10			40 "
Rye .....	16¼ "	10 72			4	77 "	69 30			71¾ bus.	64 67	(1) 21½ "
Beets.....	2,000 "	150 00			8	1,500 "	150 00	2,000 bus.				1500 "
Hay .....	52 tons.	520 00	13¾ tons.	109 60	50	90 tons.	900 00	60½ tons.	568 85	5¼ tons.	60 75	90 tons.
Corn-fodder.....	950 shks.	190 00				560 shks.	112 00	950 shks.	190 00			560 shks.
Straw .....	50 tons.	175 00				80 tons.	100 00	28 tons.	38 22	27 tons.	136 78	90 tons.
Feed .....				258 79					258 79			
Milk .....						9 600 gals	2,276 66			9,600 ga's.	2,276 66	
Sorghum.....	216¾ gals.	90 77			3	226¼ "	107 89			443 "	198 16	
Garden produce and fruit.....		10 00			10		717 29				717 29	
Clover seed .....						31½ bus.	141 50			25½ bus.	114 50	6 bus.
Miscellaneous produce.....		65 20		154 83	2		189 16				383 19	
Expense .....				842 91					842 91			
Crops of next year.....		388 67							393 67			
Labor and superintendence.....				4,448 36			(2) 234 56		3,443 58		241 11	
Experimentation .....			Material.....	30 18								
Permanent improvements.....			" .....	489 98								
Totals.....		\$3,026 86		8,093 39	137		\$7,870 66		\$6,944 78		\$7,272 70	
												30,771 96

(1) Seed of the crop of 1882.  
(2) Value of labor of farm teams included in "labor sold," in "improvement," in "experimentation" and in "value of crops of 1882."  
(3) Expended in crops of 1882. The total amount of this expenditure is as follows :

83½ bushels seed wheat.....	\$125 25
21½ bushels seed rye.....	15 35
Labor of plowing, manuring, and sowing.....	259 81

Total..... \$699 91

Material and labor.

It will be seen from the foregoing statement that the cash receipts during the year have been \$7,272.70 ; if we deduct from this sum the expenditures for live stock, seeds, feed and miscellaneous produce and for labor re-sold, we shall have \$4,824.90 as representing the sales of productions of the farm during the year. This sum was realized from the produce of 212 acres of land, there having been 65 acres in pasturage in addition to the 137 acres of crops enumerated above, an average gross return of \$22.75 per acre.

The excess of the total value of the productions of the farm for the year, as shown in the third column of this statement, over the total value of produce consumed, as shown in the fourth column, is \$925.93, which sum represents the net earnings of the farm for the year. The same balance is found by the following statement, which is based upon the inventories for the beginning and end of the year, together with the cash received from other sources than the year's productions, and expended for other purposes than the legitimate expenses of crop production :

## STATEMENT " B."

## FARM DEPARTMENT, OHIO STATE UNIVERSITY.

*Dr.*

To inventory of November 1, 1880.....	\$8,025 36	
cash on hand " " .....	39 67	
cash furnished by " Farm Committee " .....	850 00	
balance found as profit .....	925 93	
	<hr/>	\$9,840 96

*Cr.*

By inventory of October 31, 1881 .....	\$8,517 91	
cost of improvements made .....	904 07	
cost of experimental work.....	350 00	
cash on hand October 31, 1881.....	68 98	
	<hr/>	\$9,840 96

The balance above found has been expended as follows :

In construction of permanent improvements (in excess of ap- propriation ).....	\$54 07	
experimental work .....	350 00	
increase of inventory ( less cash on hand Nov. 1, 1879 ).....	452 88	
cash on hand.....	68 98	
	<hr/>	\$925 93

## THE DAIRY.

Our sales of milk and butter amounted to \$2,289.59 this year, against \$1,890.64 last year, and \$957.33 the previous year. The care of the cows and the marketing of the milk has been entirely in the hands of students. The financial results of the dairy operations are shown by

STATEMENT "C."

DAIRY DEPARTMENT, OHIO STATE UNIVERSITY.

*Dr.*

To cost of milking and care, including use of horse in delivering	\$394 37	
cash expense and repairs.....	116 39	
cost of maintaining inventory.....	121 00	
keeping 28 cows for 12 months, to balance... ..	1,441 83	
	<hr/>	
Total.....		\$2,573 59

*Cr.*

By total sales of milk .....	\$2,276 66	
"        butter.....	12 93	
growth and sales of 19 calves .....	116 00	
manure from 28 cows, @ \$6 .....	168 00	
	<hr/>	
Total.....		\$2,573 59

The above balance gives \$51.49 to pay for the feed consumed by each cow, after paying for all cost of care.

THE ORCHARD AND GARDEN.

Produce to the amount of \$717.29 has been sold from these departments, \$140.00 of which was realized from strawberries. The return from vegetables would have been much larger but for the drouth. Labor is charged to these departments to the amount of \$464.50, much of which was spent in the way of investments to be realized upon hereafter.

CASH ACCOUNT.

The disposition of the funds which have passed through my hands during the year, is shown by

STATEMENT "D."

C. E. THORNE, *Manager, in account with Farm Department, Ohio State University.*

*Dr.*

To cash on hand November 1, 1880.. .....	\$39 67	
"    received from Farm Committee.....	850 00	
"        "        sales of produce, etc.....	7,272 70	
	<hr/>	
Total cash receipts.....		\$8,162 37

*Cr.*

By expenditures for ordinary labor.....	\$2,008 74	
"        student labor..... ..	1,734 62	
salary of Superintendent for 11 months.....	700 00	
	<hr/>	
Total expenditure for labor and superintendence.....		\$4,443 36

By cash paid for increase of inventory.....	\$1,036 12	
"    improvement material..... ..	489 98	
"    experiment material.....	30 18	
"    material re-sold and current expense.....	2,093 75	
cash on hand.....	68 98	\$3,719 01
		<hr/>
Total cash expenditures.....		\$8,162 37

## IMPROVEMENTS.

The permanent improvements made upon the farm during the year, have been as follows:

(1.) The dikes on our river frontage have been repaired and strengthened, and a second culvert of eighteen-inch sewer pipe has been placed in the dike at the mouth of the old "cut-off," in order to facilitate the egress of water during heavy rains.

(2.) Several of the fields have been partially cleared of stones and useless trees, and the cleared portions of the "island" have been enlarged by taking the trees and brush out of the swale, in order to fill it with the plow and fit the whole for cultivation and pasturage. From the cost of this improvement (given below) the value of the wood obtained has been deducted.

(3.) The eastern part of field No. 3 (now assigned to the Horticultural department for gardening purposes), has been almost thorough-drained by the construction of eight lateral drains connecting with the main drains which had previously been made through the field, and the northeastern corner of field No. 6 (north of the College building), was drained by making a four-inch main across it, with six lateral drains about fifty feet apart.

(4.) A portion of the barn-yard has been paved with limestone, a work rendered necessary on account of its low situation.

(5.) The fence on our north frontage has been completed, and portions of the fences nearest the farm buildings have been whitewashed.

(6.) A row of shade trees has been set along Woodward avenue, and the vacancies along High street and in the orchard have been filled. The drouth, however, has nullified much of this work.

(7.) A rip-rap has been partly built against the bank of the brook in front of the farm-house.

(8.) A well, ten feet deep, was dug at the foot of the bluff, near the farm-house, in order to get water for the hot-beds, and in the hope that the water would be fit for drinking—a hope which was disappointed. The stock well in the northeast field was also made deeper.

(9.) A roadway was made across the north side of field No. 5, in order to facilitate the moving of stock to and from the front pasture-lot.

The cost of these improvements is itemized below.

STATEMENT "E."

ITEMIZED COST OF FARM IMPROVEMENTS.

For what purpose.	Value of labor.	Cost of material.	Total cost.
1. Protecting river frontage .....	\$84 78	\$18 00	\$102 78
2. Clearing.....	80 31	.....	80 31
3. Draining (235 rods) .....	95 59	104 58	200 17
4. Paving barn-yard.....	61 00	25 42	86 42
5. Building and whitewashing fences.....	18 51	87 92	106 43
6. Planting trees.....	24 74	16 27	41 01
7. Building rip-rap .....	15 85	.....	15 85
8. Digging wells.....	15 61	11 00	26 61
9. Making roads.....	17 70	.....	17 70
Totals .....	\$414 09	\$263 19	\$677 28

In addition to the above total, the sum of \$226.79 has been paid for material used in improvements made during the previous year, making the total expenditure for these purposes during this year, \$904.07.

FARM EXPERIMENTS.

It is impossible to state the exact cost of the experiments made upon the farm during the year. The division between the labor necessary to the care of a crop, and the additional work required to contrast the results of different processes, is sometimes very difficult to arrive at; while a very large portion of my time, as Superintendent, if not directly occupied in the direct care of experimental work, has been taken up with preparing the farm for future work of this kind. The only true way would seem to be, especially upon this farm, which is valued at several times its utmost agricultural value, to charge all its expenses to the account of experimentation, and to credit that account with produce sold. According to my previous custom, however, I have charged this account with material to the amount of \$30.18 which was consumed directly in the conduct of experimental work, and with labor and superintendence to the amount of 319.82; total, \$350.00.

These experiments were made under the direction of Dr. N. S. Townshend, Professor of Agriculture, and the following is a transcript of the report made to him of their results:

AN EXPERIMENT IN COW FEEDING.

The following experiment was made during the past winter, for the purpose of inquiring into the effect upon cattle foods of slight fermentation. It is a very commonly received opinion among feeders of live stock that food digests more fully

and therefore gives a better return, when slightly fermented before feeding, than when fed entirely fresh ; and it seems reasonable that this should be the case, since one of the known effects of such fermentation is the starting of the process by which starch is converted into sugar, which is likewise one of the first steps in the digestive process.

The recent agitation of the ensilage question has added a new interest to this subject, since one of the advantages claimed for that method of preserving food is that the partial fermentation which occurs in the silo starts the breaking down of the starchy combinations and renders them more easy of assimilation by the animal organism.

About the middle of January four cows were selected from the herd belonging to the farm as being, all things considered, the best adapted to the purposes of this experiment, and treated as follows :

1. Two cows, pair "A," were given, for a period of two weeks, a daily meal-ration consisting of six pounds to each cow of corn-meal and wheat "shorts" in equal parts by weight, the mixture being wet with warm water and allowed to stand in a cellar until fermentation had commenced, and then being fed morning and evening, making three pounds at each feed.

2. Two cows, pair "B," were fed during the same period with a dry mixture of the same quantity of meal and shorts.

3. All the cows had good timothy hay, *ad libitum*, but the quantity actually consumed was ascertained by weighing each feed given, and weighing back the residue in the mangers at the end of each week.

4. At the end of this period of two weeks the conditions of feeding were reversed, pair "A" being fed on dry meal and pair "B" on fermented meal, and this change was repeated at the end of every period of two weeks for ten weeks from the beginning of the experiment. The following is a description of the cows used in this experiment, the weights given being those at the commencement :

Number.	Kind of Stock.	Weight -lbs.	Calved.	Due to calve.
1	Common Stock.....	977	Dec. 1880.....	Farrow.
2	Grade Short Horn.....	992	" .....	Nov. 1881.
3	" " " .....	1180	Sept. 1880.....	July 1881.
4	" " " .....	1149	" .....	Farrow.

In Table I. are given the average daily live weights, the number of pounds of hay eaten, and of milk given by each cow during each week of the experiment, and the mean temperature for each week as taken by the Signal Service at the Columbus station.



In Table II. the results are grouped in such a manner as to show the average daily live weight of each cow for each period of two weeks; the weekly gain or loss in live weight, (found by taking the difference between the average weights for the last three days of the period and of the corresponding days of the preceding period;) the average weekly consumption of hay; the average weekly yield of milk, and the average weekly increase or shrinkage in yield, determined in the same manner as the gain or loss in live weight.

The averages of these results for all the periods of each method of feeding are collected in Table III.

TABLE I.

Period.	Week ending	Condition of food.	PAIR "A."						Condition of food.	PAIR "B."						Mean temperature.
			Cow No. 1.			Cow No. 2.				Cow No. 3.			Cow No. 4.			
			Average daily weight.	Lbs. hay eaten per week.	Lbs. milk given per week.	Average daily weight.	Lbs. hay eaten per week.	Lbs. milk given per week.		Average daily weight.	Lbs. hay eaten per week.	Lbs. milk given per week.	Average daily weight.	Lbs. hay eaten per week.	Lbs. milk given per week.	
1	January 23	Fermented.	987	115	156	999	119	169	Dry.	1191	163	111	1146	168	130	30
	" 30		1003	123	158	1015	130	166		1209	159	107	1138	162	125	23
2	February 6	Dry.	1002	128	151	1004	133	156	Fermented.	1221	167	96	1140	167	124	15
	" 13		1012	127	158	1008	143	159		1226	175	100	1144	173	126	40
3	February 20	Fermented.	1012	105	152	1022	138	161	Dry.	1222	171	95	1139	170	124	28
	" 27		1000	111	146	1027	130	155		1227	169	87	1136	157	116	33
4	March 6	Dry.	1000	112	135	1027	151	143	Fermented.	1235	169	79	1147	169	110	29
	" 13		988	98	129	1029	150	144		1240	166	74	1148	166	116	40
5	March 20	Fermented.	979	111	122	1034	151	143	Dry.	1243	147	75	1142	163	113	43
	" 27		976	122	118	1037	156	147		1244	165	71	1145	151	109	36

TABLE II.

DRY MEAL.							FERMENTED MEAL.					
Number of cow.	Number of period.	Average daily weight.	Gain <sup>a</sup> or lost <sup>b</sup> in weight per week.	Lbs. hay eaten per week.	Lbs. milk given per week.	Gain <sup>a</sup> or lost <sup>b</sup> in milk yield per week.	Number of period.	Average daily weight.	Gain <sup>a</sup> or lost <sup>b</sup> in weight per week.	Lbs. hay eaten per week.	Lbs. milk given per week.	Gain <sup>a</sup> or lost <sup>b</sup> in milk yield p. r week.
1	2	1007	*2.0	127	156	+1.75	1	995	*15.5	119	157	*5.25
	3	1006	+7.5	108	149	+17.50	3	1006	+7.5	108	149	+17.50
	4	991	+5.5	105	132	+19.25	5	974	*1.5	116	120	+8.75
2	1	1007	*16.5	125	167	+1.75	1	1007	*16.5	125	167	+1.75
	3	1024	*11.5	131	158	+7.00	3	1024	*11.5	131	158	+7.00
	5	1035	*9.0	153	140	+10.50	5	1035	*9.0	153	140	+10.50
3	1	1200	*20.0	163	109	0	2	1223	*1.0	171	98	+1.75
	3	1224	*8.5	170	91	+17.50	4	1237	+1.0	167	77	+12.25
	5	1243	*5.5	156	73	+3.50						
4	1	1142	+2.0	165	128	+12.25	2	1142	+5.0	170	125	*7.00
	3	1147	0	163	120	+12.25	4	1147	*11.5	167	113	*5.25
	5	1143	+7.0	157	111	+12.25						

TABLE III.

DRY MEAL.						FERMENTED MEAL.				
Number of cow.	Average weight.	Gain or lost in weight per week.	Lbs. hay eaten per week.	Lbs. milk given per week.	Gain or lost in milk yield per week.	Average weight.	Gain or lost in weight per week.	Lbs. hay eaten per week.	Lbs. milk given per week.	Gain or lost in milk yield per week.
1	1009	†1.75	116	144	†10.50	992	\$3.18	114	142	†7.00
2	1017	†1.75	144	150	†6.12	1022	\$12.23	137	155	†6.50
3	1223	†11.33	163	91	†7.00	1230	0	169	88	†7.00
4	1141	†3.00	162	120	†12.25	1097	\$3.25	168	119	†6.12
All.	1095	\$0.61	146	126	†8.97	1087	\$4.68	147	126	†6.65

From this table we perceive that during the periods of dry feeding the four cows gained, on an average, about two-thirds of a pound each in live weight, and that their milk yield decreased at the same time at the rate of nearly nine pounds each per week; while during the periods when the meal mixture was fermented the average gain in live weight was at the rate of four pounds and two-thirds each per week, and the decrease in milk yield at the rate of six pounds and two-thirds each, making a weekly difference of four pounds per head in live weight and two and one-third pounds in yield of milk in favor of fermented food.

We observe a wide difference in the apparent effect upon the individual cows, of the different methods of feeding. For example, cow No. 3 shows a large gain in live weight during the periods of dry feeding—when all the other cows lost flesh, but no gain during the periods when the food was fermented—when all the other cows gained considerably.

By reference to Table II it will be seen that this cow made large gains during the first and third periods, with a very small gain during the second period, while she lost in weight during the fourth period. The low temperature of the first week of the second period apparently served to check the increase of live weight of all the cows, and this *may* have been the cause of an apparent advantage in the dry food for this cow. The general average is not affected by this case, since it is fully counterbalanced by the effect upon cow No. 2, as shown in the same table; No. 2 having dry food during the periods when No. 3 had fermented food, and *vice versa*. This explanation will not account for the loss in weight of No. 3 during the fourth period, and we cannot safely assert that her variation in live weight is not chiefly due to the well-known tendency of animals to fatten irregularly, taking on a large increase during short periods, but making little increase, or even losing in weight, during intermediate periods. All we can say is that in the case of this experiment the *average* results—whether these results be due to the methods of feeding, to the varying influences of the weather upon different organisms, or to other constitutional peculiarities of the different cows—are in favor of fermenting the food, and suggest that a more decided advantage might be obtained by fermenting the whole body of the food—hay, as well as grain. The changes from one method of feeding to the other, while necessary for the elimination of errors arising from constitutional peculiarities of the different animals, and from the effects of changes of weather, have the disadvantage of interfering with a long continued observation upon each separate process.

To show more clearly the idiosyncrasies of the different cows used in this experiment, I append a fourth table, which gives the average live weight of each cow during the whole ten weeks of the experiment; the total yield of milk for the same time; the total gain or loss in live weight, as shown by the difference in the average weights of the first and last three days; the total decrease in the weekly flow of milk, taken in the same manner; the total consumption of hay and meal, and the cost of each hundred pounds of milk produced, hay being valued at seventeen dollars per ton, bran or shorts at fourteen dollars, and corn meal at twenty dollars, and the gain or loss in live weight at four cents per pound.

TABLE IV.

No. of cow.	Average weight.	Total yield of milk.	Total gain * or loss † in live weight.	Total shrinkage in milk yield per week.	Total amount of hay consumed.	Total amount of meal consumed.	Cost of milk per 100 pounds.
1.....	995	1428	*12	38	1152	420	\$0 96
2.....	1024	1543	*55	31	1401	420	0 86
3.....	1226	895	*69	36	1651	420	1 66
4.....	1142	1193	†5	24	1646	420	1 49

## VARIETIES OF WHEAT.

Thirty-three varieties of wheat were sown in the fall of 1880, upon a piece of bottom land selected for its apparently uniform quality. The previous crop was timothy, and the field was plowed in September. On account of the excessive drouth, sowing was delayed until October 4th to 6th, but even then the seed lay in the ground until much of it had malted before there came rain enough to start it into vigorous growth. On this account the experiment may not be as reliable as could be wished with regard to the comparative productiveness of the different varieties, although it is believed that all the varieties were equally exposed to the unfavorable conditions. Other questions, as comparative weight of grain, quality of grain and straw, etc., of course are not affected. One of the varieties, the "Centennial Black Bearded," proved a total failure, not being adapted to the climate.

After harvest samples of each variety were sent to Warder & Barnett, merchant millers, of Springfield, Ohio, with the request that they test the same with reference to their value for milling purposes. This they have kindly done, and their report is given in the accompanying table, together with the agricultural results of the experiment.

	NAME OF VARIETY.	Date of ripen- ing.	Yield per acre.		Lbs. straw to 1 bu. wheat.	Weight of grain per bushel.	Smooth or bearded.	Character of grain.			Character of straw.	
			Grain— bush.	Straw— lbs.				Color.	Size.	Milling quality.	Height.	Stiffness.
1	Siberian .....	July 12	14.69	2655	180	57	S	A	s	Poor and weak.	ft. 3¾	Good.
2	Heige's Prolific.....	" 2	19.38	2775	40	61½	S	A	s	Pretty good.	3¾	Good.
3	Mammoth Red .....	" 7	12.47	1967	157	57½	S	A	l	" "	3¾	Good.
4	York White Chaff.....	" 7	25.83	3197	123	59	S	W	l	" "	3½	Good.
5	Rickenbrode.....	" 5	19.68	3139	159	58½	S	W	m	Good and strong.	3½	Good.
6	Champlon Amber.....	" 6	22.93	3212	140	57½	S	A	m	Poor and weak.	3½	Good.
7	McGhee's Red .....	" 6	21.15	3186	141	62	S	A	l	Good.	3¼	Poor.
8	Grecian .....	" 8	20.01	2577	129	58½	S	W	s	Weak.	3½	Medium
9	Arnold's Gold Medal..	" 7	19.41	2185	112	60	S	W	m	Weak.	3¼	Good.
10	German Amber.....	" 2	21.67	2621	106	62½	B	A	l	Good.	3½	Poor.
11	Red Amber.....	" 7	25.88	2800	108	61	B	A	l	Good.	3½	Poor.
12	Sandomirka .....	" 5	26.85	3048	113	63	S	W	s	Good.	3¾	Good.
13	Silver Chaff.....	" 7	26.01	3024	116	59½	S	W	m	Moderately good.	3¾	Good.
14	Clawson .....	" 6	23.39	2760	118	59	S	W	m	Poor.	3½	Medium
15	Fultz .....	" 2	21.40	2704	126	61	S	R	m	Poor.	3½	Good.
16	Velvet Chaff .....	" 2	22.83	2411	102	64	B	A	m	Good and strong.	3½	Good.
17	Egyptian .....	" 5	22.21	2607	117	59	B	A	m	Tolerably good.	3½	Good.
18	Michigan Amber.....	" 6	21.80	2727	125	59½	B	A	l	Little gluten.	3½	Medium
19	Yellow Missouri.....	" 12	12.16	2067	243	57½	S	A	s	Poor.	3¾	Good.
20	Lancaster .....	" 3	23.73	2660	112	59	B	A	l	Choice and strong.	3¼	Poor.
21	American White.....	" 7	19.30	2444	126	59½	B	W	l	Pretty strong.	3½	Good.
22	Mediterranean .....	" 4	21.74	2249	103	59	B	A	l	Good and strong.	3¼	Poor.
23	Smith's Improved .....	" 7	16.97	2490	147	59½	B	W	m	Pretty good.	3½	Medium
24	Hungar'n White Chaff	" 2	21.80	2942	96	62	B	R		Good.	3¼	Medium
25	Treadwell .....	" 7	19.62	2432	124	59	B	W	l	Good.	3½	Good.
26	Tappahannock .....	" 2	16.52	2173	131	61	S	W	s	Choice, tol'y strong	3	Good.
27	Russian No. 2.....	" 2	17.03	1104	64	62½	S	W	s	Very good.	2¾	Good.
28	Scott .....	" 3	26.72	2111	78	61½	B	R	l	Tolerably good.	3¼	Poor.
29	Swamp .....	" 3	23.91	2215	92	61	B	R	l	" "	3¼	Poor.
30	Zimmerman .....	" 2	26.38	2261	86	61	S	R	l	Very good.	3¼	Good.
31	Theiss .....	" 5	25.20	2318	92	62½	B	R	s	Tolerably good.	3¼	Poor.
32	Golden Straw.....	" 2	19.93	2592	129	60½	S	W	m	Good.	3¼	Good.
Averages .....			21.28	2488	117	60½						

EXPLANATIONS A, Amber; R, Red; W, White; B, Bearded; S, Smooth; s, small; m, medium; l, large.

\*NOTE.—The extremely small proportion of straw to grain in Heige's Prolific may seem improbable, but a still smaller proportion is reported in the tests of the Missouri Agricultural College for 1880.

The average yield and weight of grain of the varieties ripening on successive days is as follows:

July 2	Average yield, 21.05 bushels; weight of grain, 61½ pounds.						
" 3-4	"	"	24.02	"	"	"	60½ "
" 5	"	"	23.48	"	"	"	60½ "
" 6	"	"	22.29	"	"	"	59½ "
" 7	"	"	20.68	"	"	"	59½ "
" 8-12	"	"	15.62	"	"	"	57½ "

The average yield and weight of grain of the Red and Amber, as compared with the white wheats, is as follows:

Red and Amber, average yield, 21.61 bushels; weight of grain, 60½ pounds.

White, " " 20.80 " " 60 "

The average yield and weight of grain of the smooth wheats, as compared with the bearded wheats, is as follows:

Smooth, average yield, 20.28 bushels; weight of grain, 59½ pounds.

Bearded, " " 22.56 " " 60½ "

In regard to the last two points, Warder & Barnett write as follows: "White wheats are not usually as hardy as red, and smooth not near so hardy as bearded. In an experience of thirty-six years we have never known a smooth wheat which would stand more than three crops." Our figures point toward the same conclusions, and it would seem worth while to examine this matter further.

#### A COMPARISON OF GRASSES.

In the spring of 1880 samples of four varieties of grass, viz.: Orchard grass, "English blue grass" (Randall grass of Virginia), Perennial Rye grass and Meadow fescue, were sown upon a plot of bottom land, the object being (1) to test the comparative values of these grasses for agricultural purposes, and, (2) to ascertain and establish the true botanic name of the "English blue grass," it being called *Lolium perenne* by some, and *Festuca pratensis* by others. This point was settled by Professor A. P. Morgan, who decided that the English blue grass was, botanically, *Festuca elatior*, (Gray;) the meadow fescue being *Festuca elatior*, var. *pratensis*. It is evident to an ordinary observer that the English blue grass is a *Festuca* rather than a *Lolium*, but the difference between the two fescues is not so striking. It consists, agriculturally, in a larger habit of growth, and slightly later date of blooming for the *F. elatior*. On account of its more vigorous growth it is decidedly preferable to the meadow fescue proper as a meadow grass, while either of them seems, in our case, to be far ahead of the Perennial Rye grass. In comparison with Orchard grass the English blue grass seems to afford an equally good aftermath, while its tendency to form a more compact sod will probably compensate, to a large extent, for its smaller habit of growth. It blooms about a week later than Orchard grass.

#### VARIETIES OF STRAWBERRIES.

One thousand plants, each of Forest Rose, Captain Jack, Crescent Seedling, Wilson and Downing strawberries, were set on a gravelly soil during the spring of 1880.

They had, as far as possible, equal opportunities and equal care, and at picking-time this year there was no very strongly marked difference between the yield of either of the four last named varieties, the advantage being somewhat in favor of the Wilson and Crescent Seedling. The Forest Rose, however, failed to grow well last summer, and failed to bear well this, although, what berries were produced, were much larger than those of either of the other varieties.

#### VARIETIES OF SORGHUM.

Several varieties of sorghum were planted in the spring, but bad seed and the drouth so interfered with their growth, that no very satisfactory tests as to relative productiveness could be made. The Orange varieties, however, especially the Kansas Orange, seemed to be decidedly superior to the Early Amber for our soil and latitude—a repetition of last season's experience.

#### VARIETIES OF CORN.

The "Leaming" and "Porter" varieties of yellow corn have again given excellent satisfaction, the former yielding about seventy bushels per acre, notwithstanding the excessive drouth. Several other varieties of corn were planted, but the same causes which affected the sorghum, have prevented the making of satisfactory comparisons.

Several other experiments were instituted during the season, but their results are either not yet ascertained, or have been obscured by the drouth.

#### THE POTATO BUG EXTERMINATOR.

donated to the farm last season, by Mr. H. S. Fox, of St. Louis, Mo., has been used with the greatest satisfaction in fighting the potato bugs, one man doing more work with this apparatus than several could by the old-fashioned methods.

As this report closes my connection with the Ohio State University, I wish to express to the Board of Trustees my thanks for the courteous treatment I have received at their hands. I also desire to express my obligations to the foreman of the farm, George Bell, for the faithfulness with which he has co-operated with me in conducting the work of the farm, both ordinary and experimental.

The foregoing is respectfully submitted.

C. E. THORNE,  
*Farm Manager.*

## RECORD OF PROCEEDINGS

### OF THE BOARD OF TRUSTEES OF OHIO STATE UNIVERSITY.

COLUMBUS, OHIO, *November 18, 1880.*

The Board met at 8 o'clock P. M.

Present—Messrs. Miller, Johnston, Godfrey, Alston Ellis and S. H. Ellis.

The minutes of the previous meeting were read and approved.

The Secretary presented the annual report of the Board, and the same was approved.

Letters from Messrs. Sabin and Mariott were read and ordered filed, after which recess was taken until 8 o'clock A. M., November 19.

On reassembling, the Board took into consideration the claim of Prof. Mathew, for the use of his drawing materials during the six years of his connection with the University, and instructed the Secretary to settle the same on the basis proposed by said Mathew, allowing him \$44.00 besides amount due from house rent, and for some unused lithographic material and implements.

The Finance Committee made report that they had carefully examined the accounts of the Treasurer, comparing the warrants paid by the Treasurer and his statement of receipts, with the stubs on the warrant-book of the Secretary, and the receipts in his cash-book, and had found the accounts to be strictly correct, and had so certified.

The Executive Committee made a report of their proceedings since the last meeting of the Board.

Captain C. A. Barton, agent for the sale of Virginia Military Lands, made a report of his agency since June, 1880, whereupon the Board ordered the payment of his salary, \$300, and expenses, \$110.19, to November 1, 1880, and the report and account to be filed.

On motion of Mr. A. Ellis,

*Resolved*, That Captain C. A. Barton, agent of this Board, in the matter of the Virginia Military Lands, be instructed to have such lands belonging to the University, as can not be sold at the present appraised value, reappraised, with a view to their more speedy sale.

The Secretary reported the completion of the Virginia Military



Land Register, ordered by the Board at their meeting April 20, 1880. The same was ordered to be kept for reference and further entry.

On motion of Mr. A. Ellis,

*Ordered*, That the income of the Endowment Fund (so called), held in trust by the State, and all income from whatever source not otherwise specifically directed, be, and is hereby appropriated for the maintenance and support of the University for the ensuing fiscal year, and for such other purposes incident thereto as the Board of Trustees may, from time to time, determine; provided, that the use of the income (\$20,547) of so much of the fund (\$342,450.81), as was derived from the proceeds of the land scrip donated by act of Congress July 2, 1862, be limited to the restriction of the second clause of section 5 of said act of Congress.

The reports of the President of the University and the Professors were then read, and these, with the other reports, referred to the President of the University and Secretary of the Board, to prepare for publication.

On motion, the following appropriations were ordered, viz.:

For Department of Physics, (to be expended by Prof. Mendenhall) .....	\$1,000 00
For Department of Zoology and Comparative Anatomy.....	400 00
“ Chemistry, (Library use) .....	100 00
“ Latin and Greek, “ .....	100 00
“ Geology .....	50 00
For the College Band .....	25 00

On motion of Mr. S. H. Ellis,

*Resolved*, That the By-Laws of the Board be amended so as to read, “ One meeting of the Board shall be held on the *second* Thursday (instead of *third* Thursday), of November,” as stated in section 2 of the By-laws.

The following preamble and resolutions were adopted:

WHEREAS, The Board recognizes the practical importance of the subject of Entomology, and the special fitness of Dr. J. M. Wheaton to speak on this subject to the farmers of Ohio; therefore,

*Resolved*, That Dr. J. M. Wheaton be invited to deliver two or more lectures on Entomology in the forthcoming course of Lectures on Agriculture, at the State University.

*Resolved*, That President Orton be requested to correspond in reference to securing a person fitted to take charge of a Horticultural Department in connection with the Department of Agriculture.

The election of officers of the Board was then proceeded with, and resulted as follows, viz.:

For President of the Board, T. Ewing Miller	
For Vice President of the Board, James B. Jamison.	
For Treasurer “ Henry S. Babbitt.	
For Secretary “ Albert Allen.	

For Executive Committee, J. H. Anderson, Chairman; Alston Ellis and Stephen Johnston.

For Farm Committee, James B. Jamison, Chairman; T. J. Godfrey and S. H. Ellis.

For Finance Committee, Alston Ellis, Chairman; S. H. Ellis and T. J. Godfrey.

*Resolved*, That in case both the non-resident members of the Executive Committee shall be absent at the regular or called meetings of said committee, the Chairman of the committee and President of the Board shall be authorized to transact all business properly belonging to the Executive Committee.

*Resolved*, That the salary of the Secretary shall be (\$1,200), twelve hundred dollars per annum, and that in addition to his ordinary clerical duties, as defined in the by-laws of this Board, he shall perform the following duties:

1. Superintend all purchases authorized by the Board, the Executive Committee and the Farm Committee.
2. Supervise all improvements and repairs of buildings.
3. Attend all meetings of the Executive and Farm Committees, and keep a record of the proceedings of the same.
4. Keep an accurate account of all sales of Virginia Military Lands, receive all moneys arising from such sales, and certify the same into the Treasury.
5. Receive all rents and term fees, and certify the same into the Treasury.
6. Keep at his own expense an office at some convenient point where the Board and different committees may meet for the transaction of business.

On motion, it was

*Resolved*, That the bond of the Treasurer be fixed at forty thousand dollars, and that the Secretary file the same as soon as approved by the Attorney-General.

*Ordered*, That the Secretary be instructed to draw an order in favor of the Strobridge Lithographing Company, of Cincinnati, for \$110.50, in payment of wood-cut, letter-heads and envelopes as per contract.

*Ordered*, That the Secretary be authorized to order of the Strobridge Lithographing Company 5,000 additional letter-heads at a price not to exceed eight dollars per thousand, and also to make such changes in the names, etc., as may be necessary by reason of the action of the Board.

*Resolved*, That the salary of Assistant Professor, Wm. A. Mason, Jr., be fixed for the second and third terms of college year at the rate of \$1,200 per annum. Carried.

The Farm Committee presented their annual report, which, after reading, was referred before publication to the Chairman, Jas. B. Jamison, absent from this meeting.

On motion of Mr. Johnston, the following preambles and resolution were adopted:

WHEREAS, The Farm Manager, C. E. Thorne, on the 17th day of June, 1880, tendered his resignation as Farm Manager; and

WHEREAS, Upon said resignation the Board of Trustees, by a resolution, giving to the Prof. of Agriculture a general supervision in the management of the farm; and

WHEREAS, Said professor, upon the urgent request of the Trustees, refused to assume the duties assigned to him, or to make any suggestions as to the future man-

agement of said farm, thereby compelling the Trustees to obtain the services of a suitable person to fill the vacancy occasioned by the resignation of the said Farm Manager; therefore,

*Resolved*, That the President of this Board be requested to look after some suitable person to fill said vacancy, and to report at the next meeting of the Board.

Board adjourned.

T. EWING MILLER,  
*President.*

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COLUMBUS, O., *January 5* 1881.

The Board met at 9 o'clock A. M.

Present—Messrs. Anderson, A. Ellis, S. H. Ellis, Godfrey, Jamison, Johnston and Miller.

The President called the meeting to order. The minutes of the previous meeting were approved. The report of Executive Committee was read and accepted. President Orton, who was appointed to correspond in relation to a suitable person to fill a chair of Horticulture and Botany, reported the names and credentials of the following persons, viz.: Henry E. Owen, Adrian, Michigan; Prof. W. A. Buckhout, State College, Pa.; Prof. W. A. Kellerman, Fairfield county, O.; A. P. Morgan, Dayton, O.; Prof. W. L. Lazenby, Ithaca, N. Y.; Prof. J. C. Arthur, Madison, Wisconsin.

On motion of A. Ellis, it was

1. *Resolved*, That a Department of Horticulture and Botany be established in connection with the Ohio State University, and that for the present the Department be placed under the charge of an Assistant Professor, whose salary shall be \$1,500 per annum. Carried.

2. *Resolved*, That the position of Assistant Professor in said department be tendered to ———, and that the Secretary be instructed to notify him of his appointment. Carried.

3. *Resolved*, That the duties of said Professor shall begin with the opening of the spring term. Carried.

An election was then entered into, and A. P. Morgan, of Dayton, Ohio, having been selected, the blank in the second resolution above was ordered to be filled with his name.

On motion of Mr. Jamison, it was

*Resolved*, That the matter of Farm Manager, with the applications for that position, be referred to the Farm Committee, to report during this session of the Board. Carried.

A communication from Attorney-General Nash, to the Board, concerning the suit of Wm. H. Leete against the University, and giving

the terms of a compromise offered by his attorney, M. A. Daugherty, was read and discussed, whereupon Messrs. Miller, Johnston and Anderson were appointed a committee to see the Attorney-General and Mr. Leete's attorney in relation to the matter, and report at 7½ o'clock to-night.

On motion, a recess was taken until 7½ o'clock P. M.

The Board on reassembling gave immediate attention to the report of the committee concerning the Leete suit, which was as follows, viz.:

Your committee recommend that in the matter of the action of Wm. H. Leete, against the Ohio State University, a settlement of the case be made upon the terms proposed by M. A. Daugherty, attorney for said Leete, to wit: the payment by the University of the sum of two thousand two hundred and eighty-four dollars and thirty-three cents.

On motion, the report of the committee was adopted, and the Secretary ordered to draw his warrant on the Treasurer, payable to M. A. Daugherty, for \$2,284.33, to be distributed by him according to the schedule on file, said sum to be paid from proceeds of sale of Virginia Military Lands.

*Ordered*, That \$15 be allowed Mr. Makepeace for his services as leader of the band.

The Secretary was instructed to write C. A. Barton, agent, to delay any reappraisements of lands in Adams or Pike counties until it was evident they could not be sold at present appraisement, and that while they ratify his action in the one case reported of a contract for the discovery of lands by S. Kendrick, they are not willing at present to extend the terms of the agreement to other cases.

A communication from Mr. Evans, attorney for Wooley & Sons, in regard to their claim of a portion of Survey No. —, Virginia Military Lands, was read and referred to Mr. Johnston to investigate and take such action as he might decide best.

The Farm Committee made report as follows:

The Farm Committee, to whom was referred the matter of Farm Manager, report that we have carefully investigated the subject referred, and unanimously recommend that C. E. Thorne be retained as such manager from April, 1881, to April, 1882, at a salary of nine hundred dollars (\$900), and in the event of his non-acceptance the committee be empowered to act in the selection of another person.

The report, after discussion, was adopted.

The term for which Lieutenant Lomia had been detailed by the War Department, as Instructor in Military Science and Tactics in the University expiring in June next, applications and recommendations of the following officers of the United States Infantry were presented, viz.:

First Lieutenant, George Ruhlen, 17th U. S. Infantry; Second Lieutenant, A. M. Ogle, 19th U. S. Infantry, and Second Lieutenant, H. S. Heinstand, 11th U. S. Infantry.

Lieutenant George Ruhlen having been elected to the position, the President of the Board was requested to make application to the War Department, asking that he be detailed for this service after June, 1881.

Board adjourned to 8 o'clock A. M. to-morrow.

Board met at 8 o'clock A. M. January 6, 1881.

On motion, it was

*Ordered*, That \$100.00 be appropriated to pay the traveling expenses of Dr. Townshend in attending Agricultural Institutes, upon the presentation of his vouchers therefor.

On motion of Mr. Johnston,

*Resolved*, That the Farm Manager be and he is hereby requested to prepare and submit to the Board of Trustees at their next meeting a detailed plan for the future development and improvement of the University farm, so as to adapt the same systematic experimental tests in all the branches of agriculture, and also such improvements as will be calculated to add to the beauty of the farm, not including that portion of the same now under the supervision of Prof. McFarland. The resolution was, by vote, referred to the Farm Committee, to report at some future meeting of the Board.

The following resolution was offered by Mr. Johnston, and adopted, viz. :

*Resolved*, That Prof. A. H. Tuttle be and is hereby requested to prepare and submit a plan for the establishment of a fish hatchery on the University farm, and also to make such recommendations and suggestions as in his judgment may be necessary in order to carry out the plan for fish culture on the farm.

On motion, it was unanimously

1. *Resolved*, That the President and Faculty of the Ohio State University are hereby instructed to arrange for holding daily a general meeting of the students in the University chapel.

2. *Resolved*, That the nature of the exercises and the time of holding the same shall be matters under the control of the Faculty.

On motion, the Board adjourned, subject to the call of the President.

T. EWING MILLER,

*President.*

COLUMBUS, O., January 20, 1881.

A special meeting of Trustees was called to-day. Present, Messrs. S. H. Ellis, Jamison, Johnston and Miller.

President Orton appeared before the Board, and represented the difficulty in executing an order of the Board relating to the daily assembling of the students for chapel services, whereupon Mr. Johnston offered the following :

*Resolved*, That the resolution heretofore passed, requiring a daily assemblage of the students, be suspended for the time being, until otherwise ordered by the Trustees. Adopted.

On motion of Mr. Johnston,

*Resolved*, That the Executive Committee be and are hereby requested to investigate and report the feasibility of introducing the electric light upon the grounds of the Ohio State University, including, if practicable, the substitution of said light for the gas-light now used in the buildings of the University, and that said committee report at the next meeting of the Board. Adopted.

The Board then adjourned.

T. EWING MILLER, *President*.

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COLUMBUS, O., *May 6*, 1881.

Board met at 8 o'clock A. M. Present, Messrs. Anderson, S. H. Ellis, Alston Ellis, Godfrey, Jamison, Johnston and Miller.

Mr. Johnston made verbal report on the use of electric light at the University, deeming it unpracticable at this time. Also, on the claim of Evans & Son to certain military land, concerning which he had fully advised Capt. Barton, the Agent of the Board for these lands.

The Executive Committee made full report of their proceedings since the last meeting of Board. The report was approved.

The minutes of the proceedings of the Farm Committee were read and approved.

*Ordered*, That \$500.00 be appropriated for the purchase of chemicals, to be expended by Prof. Norton for the Department.

*Ordered*, That \$15.00 be appropriated for the services of Geo. D. Makepeace, as leader of the College Band during the Spring term.

*Ordered*, That \$500.00 be and is hereby appropriated for the use of the Farm Committee to pay current expenses.

The resignation of Professor Joseph Millikin, on account of ill-health, was received, and on motion the following resolutions were unanimously adopted :

*Resolved*, That the resignation of Joseph Millikin, as Professor of English Language and Literature, be accepted.

*Resolved*, That in recognition of his eminent scholarship and acceptable services, and in view of the fact that such action has been unanimously recommended by the Faculty of the University, the Degree of Doctor of Philosophy is hereby conferred on Professor Millikin.

A communication was received from Prof. N. W. Lord, in relation to the work done in his department in the analysis of minerals, &c., and asking for privileges and pay therefor: whereupon, the following resolution was adopted:

*Resolved*, That Prof. N. W. Lord, for the next year, be employed at a salary of \$1,000, for which sum he is required to take charge of the instructions in the Department in assaying, metallurgy and mining, and to do in the State Laboratory such work as shall be submitted to him by the President of the Faculty and is covered by the State law. That he is to have full use of the Laboratory for other work, and the privilege of employing at his expense such assistance as he may desire in the Laboratory. That he will, at his expense, provide all current supplies, except those furnished students in assaying. No Laboratory or other work is to interfere with class instruction or other duties to the University. That all work so taken and done shall be charged for and collected by him. That he retain so much thereof as will make his net salary for the year, together with said one thousand dollars, two thousand dollars, if so much be collected by him, and that all excess over two thousand dollars shall be by him paid over to the University. That he shall maintain the apparatus of the Department and keep the same in good condition.

Prof. Orton was heard by the Board in relation to readjustment of Class Instruction in several Departments.

A letter was read from Prof. Mendenhall, asking for an appropriation of \$500, for purchase of apparatus for Department of Physics.

On motion, it was

*Ordered*, That \$500 be and is hereby appropriated for the purchase of apparatus for the Department of Physics, to be expended by Prof. Mendenhall.

The report of Prof. Tuttle on Fish Culture at the University, was read and filed.

A communication from Prof. Smith was read, asking for leave of absence for two years to complete his studies in Germany. The request was declined.

The matter of insuring the Mechanical Laboratory was indefinitely postponed.

On motion of Alston Ellis, the following preamble and resolution were unanimously adopted:

WHEREAS, The term of Hon. Stephen Johnston, as a member of the Board of Trustees of the Ohio State University will soon expire; and whereas, the services of Mr. Johnston as a member and President of the Board have been of such a character

as to redound to the interest of the University, and to meet the hearty approval of his fellow laborers; therefore,

*Resolved*, That the thanks of the Board are hereby tendered to Hon. Stephen Johnston for his zeal in behalf of the State University, and his kind and gentlemanly attitude towards the members of the Board.

On motion, it was

*Resolved*, That the Secretary, in issuing the notice of any called meeting, called under the rules of the Board, shall state fully to each member the object of such called meeting.

A communication from Prof. S. C. Derby to the Board, was read, and, after discussion, the following resolutions were adopted, viz.:

*Resolved*, That the Trustees of Antioch College, of Yellow Springs, Greene county, Ohio, are hereby invited to co-operate with the Trustees of the Ohio State University in the work of higher education, on the following general basis, viz.:

The Trustees of Antioch College shall nominate one or more Professors to such departments of liberal culture in the Ohio State University as shall be agreed upon by the Boards of Trustees of the two Institutions herein named, which departments shall be known as the Antioch College Professorships. The nomination of such Professors shall be submitted to, and approved by, the Trustees of the State University.

The salaries of such Professors shall be paid by the Trustees of Antioch College, but said Professors shall be on terms of entire equality in college administration with the Professors of the State University.

The nominations and approvals of the respective Boards shall be renewed for each collegiate year.

On motion, it was

*Ordered*, That the appropriation of \$1,000, made by the General Assembly for "ordinary repairs" for the Ohio State University, be expended under the direction of the Executive Committee, and that the Secretary be and is hereby authorized to draw his warrant on the Auditor of State for the same, whenever the bills or accounts chargeable against this appropriation shall have been endorsed by the Chairman of the Executive Committee.

*Ordered*, That the Secretary be and is hereby authorized to draw his warrant on the Auditor of State, in favor of the Treasurer of the University, for the appropriation of the \$350 for "trustee expenses," when the vouchers shall be approved by the President of the Board.

On motion of Mr. A. Ellis, the following preamble and resolution were adopted:

WHEREAS, It is the desire of Dr. Edward Orton to be released from the duties of President of the University; therefore,

*Resolved*, That the President of the Board and the Executive Committee be authorized to correspond with suitable parties with a view to filling such position, and that the result of the correspondence be reported to the Board for action.



On motion, it was

*Resolved*, That Prof. Josiah R. Smith, Prof. John T. Short, and Prof. N. W. Lord be advanced to the full professorial rank.

*Resolved*, That the Secretary of the Board, in notifying the gentlemen of the above action, be instructed to state that said advancement does not carry with it any increase of compensation.

Board adjourned.

T. EWING MILLER, *President*.

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COLUMBUS, OHIO, *June 21, 1881.*

The Board met at 8:30 o'clock A. M.

Present—Messrs. Anderson, S. H. Ellis, Godfrey, Jamison, Miller and L. B. Wing.

The minutes of the previous meeting were read and approved.

The correspondence between the Secretary and Prof. Lazenby of Cornell University, touching his appointment to a chair in the University, were read.

The report of the Executive Committee was presented and approved.

A communication in writing, to the Board, concerning the qualifications of certain persons for the position of President and Professor of Latin and Greek in the University, and a readjustment of some of the studies, was presented and read by President Orton.

The resignation of Prof. Josiah R. Smith was read, and on motion, the same was accepted.

On motion, Prof. S. C. Derby, of Antioch College, Ohio, was unanimously elected Professor of Ancient Languages in the Ohio State University, the vote being by yeas and nays.

Mr. Jamison presented the resignation of C. E. Thorne as Farm Manager, to take effect at some unnamed time. The resignation was referred to the Farm Committee to report upon during the session of the Board.

On motion of Mr. Godfrey, Mr. Wing was elected to fill the vacancy in the Executive Committee, caused by the expiration of the term of Hon. Stephen Johnston.

On motion, the Board proceeded to the election of a President to succeed President Orton, whose resignation had been tendered the Board June 20, 1878.

Prof. Walter Q. Scott, of Easton, Pennsylvania, was nominated. On the call of the ayes and nays, Messrs. Miller, Jamison, Wing, Godfrey and Ellis voted aye, and Mr. Anderson voted nay. The Chair announced Mr. Scott as duly elected President of the Ohio State University and Professor of Philosophy and Political Economy.

Messrs. Wing, Godfrey and Jamison were appointed a Committee to notify Prof. Scott of his election, and ask his presence at the University at two o'clock P. M. to meet the Board.

At two o'clock P. M. the Board met in President's room at the University.

On motion, Lieutenant George Ruhlen was appointed Assistant Professor of Mathematics, to teach two hours each day, at a salary of \$500 per annum.

On motion, Miss Belle Swickard was elected Assistant Librarian on a salary of \$125 per annum.

*Ordered*, That the following appropriations be and the same are hereby made, viz.:

For advertising, general and special .....	\$200 00
“ Library, to be distributed .....	300 00
“ Chemical Laboratory supplies.....	300 00
“ Assistant in Chemical Laboratory .....	150 00
“ improvements and material in Mechanical Laboratory.....	210 00
“ Zoölogical Department supplies .....	200 00
“ ventilation in Chemical Department, a sum not exceeding.....	125 00

To be expended under the direction of the Executive Committee.

Repairs to the gas reservoir and house and to the dormitories were also ordered, under the direction of the Executive Committee.

The Board proceeded to the election of officers of the University for next collegiate year, at the salaries named herewith, the full roster being :

For President, Walter Q. Scott, salary.....	\$2,750 00
For Prof. of Geology, Edward Orton, salary.....	2,250 00
“ General and Applied Chemistry, Sidney A. Norton, salary.....	2,250 00
“ Agriculture, Norton S. Townshend, salary.....	2,250 00
“ Mathematics and Civil Engineering, R. W. McFarland, salary..	2,250 00
“ Zoology and Comparative Anatomy, A. H. Tuttle, salary.....	2,250 00
“ Mechanics, W. S. Robinson, salary.....	2,250 00
“ Physics, T. C. Mendenhall, salary.....	2,250 00
“ Mining and Metallurgy, N. W. Lord (conditional), salary.....	2,000 00

For Prof. of History and English Language and Literature, John T. Short,	
salary.....	1,800 00
“    Botany and Horticulture, W. L. Lazenby, salary .....	2,000 00
“    Latin and Greek Languages, S. C. Derby, salary.....	1,600 00
“    Military Science and Tactics, and Mathematics. Geo. Ruhlen,	
salary.....	500 00
For Assistant Prof. of Industrial Art, Wm. A. Mason, salary.....	1,200 00
For Instructor in French and German Languages, Alice Williams, salary...	650 00

The Board ordered the following minute to be entered on its records in regard to the changes made in the Department of Botany and Horticulture, viz.:

“In the recent establishment of the Professorships of Botany and Horticulture in the University, the main purpose of the Board of Trustees was to develop and reinforce the *practical* side of instruction in the subjects named, and that to furnish the experimental investigation and practical guidance, for which the farmers and horticulturists of the State look to this institution, the Board feels constrained to hold the Professorship closely to the plan of its organization, and to *make practical Horticulture its central feature*. In the retirement of Prof. A. P. Morgan, after a brief term of service in this Professorship, the Board takes pleasure in bearing testimony to his extensive attainments in Scientific Botany, to his unusual skill as a teacher of this subject, and to his high character as a man.”

Messrs. Anderson, Godfrey and S. H. Ellis were appointed by the President of the Board, to draft resolutions expressive of the sentiment of Board concerning President Orton's retracy from the Presidency of the University.

On motion, the Board adjourned to meet to-morrow at 8:30 o'clock A. M., at the office of the Secretary.

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WEDNESDAY, June 22, 8:30 o'clock A. M.

Board met. All the members present except Alston Ellis.

Mr. Anderson, as Chairman of the Committee, presented the following, which was unanimously adopted:

WHEREAS, Edward Orton, President of the Ohio State University, to enable him to devote more time to his special department—Geology—has seen fit to tender his resignation as President after a continuous service of eight years; therefore,

*Resolved*, That in accepting it, which we do with unfeigned regret, we feel that words are powerless to express our high appreciation of his faithful, conscientious and able services in behalf of the University.

*Resolved*, That in his special field, which his earnest endeavors, thorough scholar-

ship and practical talents will still further adorn, he should have and will receive our hearty well wishes and co-operation.

*Resolved*, That as a recognition of his eminent labors at the head of our institution, the honorary degree of LL. D. be and the same is hereby conferred on him.

*Ordered*, That \$50.00 be and is hereby appropriated to buy specimens for the Geological Museum, and that \$75.00 be appropriated for clerical services in the President's room.

The following degrees were, on recommendation of the Faculty, conferred by the Board, viz.:

Master of Science, Curtis C. Howard.

Mining Engineer, Ferdinand Howald.

Bachelor of Arts, Charles M. Lewis.

“ “ Kenneth D. Wood.

“ Philosophy, Josephine M. Bates.

“ “ Howard D. Pool.

“ Science, William K. Cherryholmes.

“ “ David O'Brien.

Certificates of Proficiency in Civil Engineering, William E. Hawley, John C. McCullough, Jacob D. Streeper.

Prof. Robinson was instructed to place the Mechanical Laboratory in charge of F. D. Marvin during the vacation.

Reports were read and approved, from Prof. McFarland as Bursar, Superintendent of Lawn, and on cost of wind-mill.

On motion, Prof. McFarland was elected Bursar for the next year, at the usual salary, \$25.00.

*Ordered*, That the bills of the Farm Manager, of \$62.62 for work, etc., on the lawn, and \$25.00 to R. W. McFarland, as Superintendent of Campus, be paid.

The Farm Committee, to whom was referred the resignation of C. E. Thorne, as Farm Manager, made report, and the resignation was accepted, to take effect October 1, 1881.

A communication from Prof. Orton, relative to the disposition of the furnace and gas generator, placed by himself in the President's residence, was referred for action to the Executive Committee.

A communication from John Walsh, asking for reimbursement, by sale of certain land, which he claimed was damaged by reason of the dam constructed on the Olentangy River, was read, and, on motion, indefinitely postponed.

Capt. C. A. Barton appeared before the Board, submitting written statements of sales and collections made by him as agent of the Virginia Military Lands, since Nov. 15, 1880, and bill of expenses incurred during

same period; whereupon, on motion, "the Secretary was instructed to settle with Mr. Barton according to these statements; draw warrants on the Treasurer for the amount due Mr. Barton for salary and expenses, and to refer the same to the Executive Committee for examination, and if correct, for verification."

Board adjourned.

JAMES B. JAMISON,  
*President pro tem.*

**TWELFTH ANNUAL REPORT**  
**OF THE**  
**BOARD OF TRUSTEES**  
**OF THE**  
**OHIO STATE UNIVERSITY,**  
**TO THE**  
**GOVERNOR OF THE STATE OF OHIO,**  
**FOR THE YEAR 1882.**

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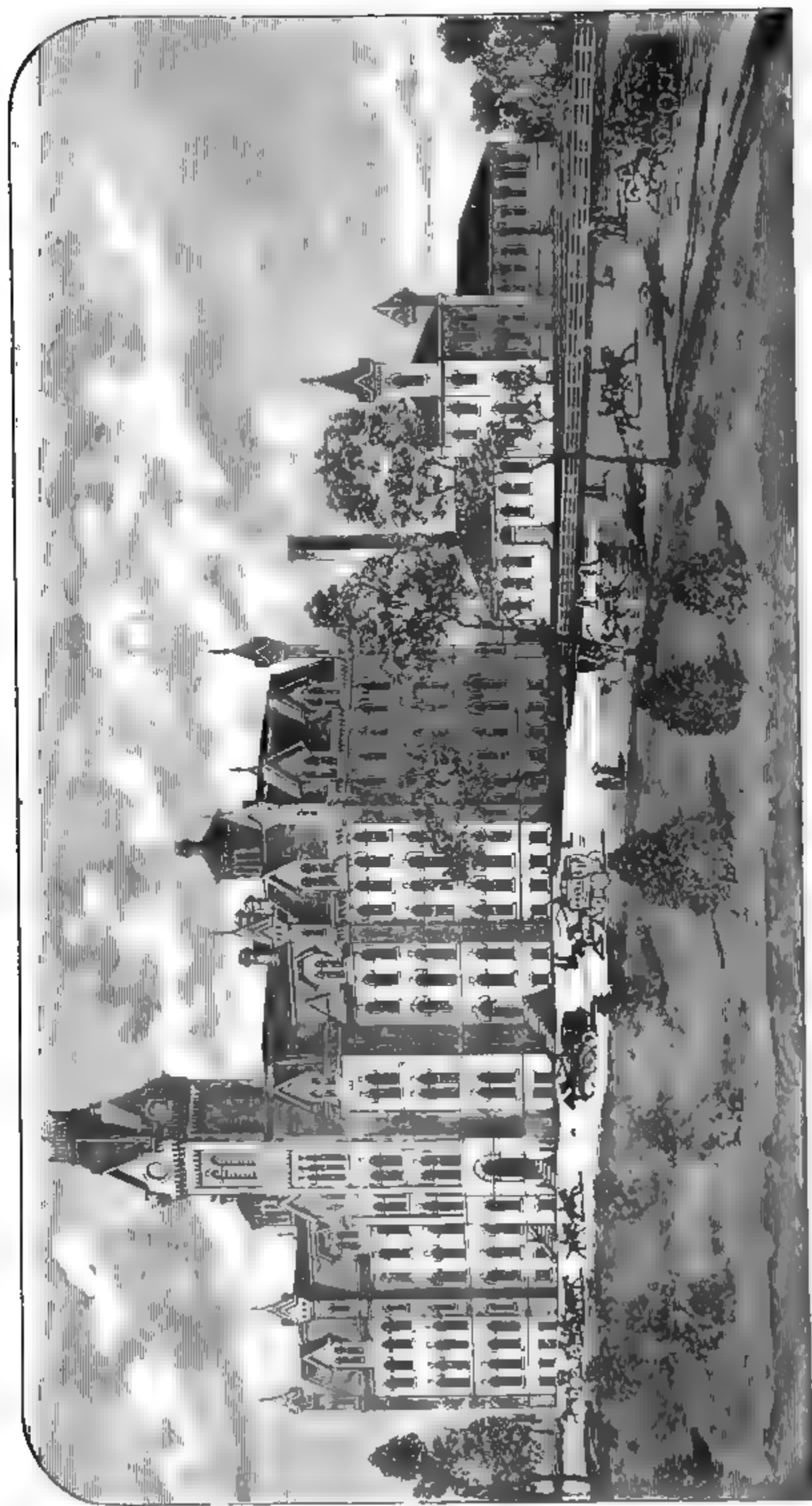
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OHIO STATE UNIVERSITY.

**TWELFTH ANNUAL REPORT**

**OF THE**

**BOARD OF TRUSTEES**

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---

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BOARD OF TRUSTEES.

ALSTON ELLIS.....	Sandusky, Ohio.
Hon. T. EWING MILLER .....	Columbus, Ohio.
Hon. JAMES H. ANDERSON .....	Columbus, Ohio.
Hon. JAMES B. JAMISON.....	Cadiz, Ohio.
SETH H. ELLIS.....	Springboro, Ohio.
LUCIUS B. WING .....	Newark, Ohio.
Hon. THOMAS J. GODFREY .....	Celina, Ohio.

OFFICERS OF THE BOARD :

T. EWING MILLER .....	<i>President.</i>
J. H. ANDERSON.....	<i>Vice-President.</i>
ALBERT ALLEN .....	<i>Secretary.</i>
HENRY S. BABBITT... ..	<i>Treasurer.</i>

EXECUTIVE COMMITTEE :

L. B. WING,	T. J. GODFREY,	T. EWING MILLER.
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FARM COMMITTEE :

S. H. ELLIS,	L. B. WING,	JAMES B. JAMISON.
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FINANCE COMMITTEE :

ALSTON ELLIS,	J. H. ANDERSON,	JAMES B. JAMISON.
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COLUMBUS, OHIO, *November 15, 1882.*

*To His Excellency, Governor Charles Foster :*

SIR: I have the honor to transmit herewith the Twelfth Annual Report of the Board of Trustees of the Ohio State University, showing the condition and progress of the University.

Very respectfully,

Your obedient servant,

ALBERT ALLEN,

*Secretary of the Board.*

## REPORT OF TRUSTEES.

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*Governor Charles Foster :*

SIR : The Board of Trustees herewith submit the twelfth annual report of the Ohio State University.

Nine years ago, the Ohio State University was opened for the reception of students. Estimated by the number of matriculates then enrolled as compared with that of this term, an increase in public appreciation, of more than ten fold is noted. Then only 27 students were in attendance at the beginning of the term, while now 338 are being instructed in the different departments of the University. Nor is this gratifying increase in numbers the sole measure of advantages resulting to the State. A broader scope of instruction with better facilities, is giving back to her a superior class of more thoroughly educated and better trained minds ; and it is not without reason that the institution, in all that pertains to effective work in the truest and best forms of mental culture, claims a rank and position among the best of American colleges.

No event during the year has so greatly stimulated the energies of all to whom the interests of the University are intrusted, as the action of the last General Assembly in placing the means within the power of the Board to meet the necessity for additional buildings ; by which the increasing want of room is not only supplied, but the invaluable collections and outfits belonging to the various departments are better secured against loss by fire and other causes. The appropriation of \$20,000.00 made by the General Assembly on the 31st of March last, for a Chemical Laboratory building was followed by such necessary action on the part of the Board as would secure the completion of the building at as early a date as possible. At their meeting on the 18th of April following, the selection of a site was made, and J. T. Harris & Co., architects, were engaged to perfect the plans already in the main agreed upon. The approval of the plans, specifications and estimates, and other legal steps required by section 783 and 784 of Revised Statutes having been taken, bids for the work were opened and considered on the 8th of June. The contract was awarded to Messrs. Clark and Fahey for the sum of \$18,750. In the construction of the building special effort has been made to adapt it, in all its parts, to the uses for which it is designed. Architectural effect

could play but a secondary part in the construction, as the appropriation would only allow the erection of a plain and substantial, but not unsightly building, 42 feet 2 inches wide by 160 feet 2 inches long, not including the central wing, 40 by 40 feet. The basement runs the entire length of the building, and is 8 feet high in the clear. The stone foundation walls are principally 24 inches in thickness, with heavy stone footings at the bottom. These walls extend four feet above the ground, and the elevation of the structure from the ground line to the top of the cornice is 37 feet, and to the comb of the roof, 51 feet. The first story is 14 feet high, and contains 15 rooms. The second is 15 feet 3 inches high, and contains 16 rooms, all of which are enclosed by brick walls, there being but few stud partitions in the building. The outer walls are of brick, 17 inches thick, and the roof being covered with slate and the cornice being of iron, the edifice is protected from danger by fire from other buildings. All necessary gas, poison, and other ventilating appliances used in Laboratory work in the department of Chemistry and Mining and Metallurgy have been introduced in the construction. The transfer of the apparatus and equipment belonging to the two schools, from the main building, will be made as soon as circumstances will admit. No part of such transfer involving the cost of plumbing work and heating arrangements, was embraced in the contract, the entire appropriation being hardly sufficient for the simple erection of the building of adequate dimensions. This expense will have to be provided for, as the Board will not be able to meet amount from funds at their disposal.

Under an act of the Legislature, passed April 17, 1882, section 8433 of the Revised Statutes, relating to the Virginia Military Lands, was amended to read as follows: "The proceeds of the sales of such lands, or so much thereof as may be necessary (after the payment out of the same of all the necessary expenses of survey and sale) remaining uncertified into the treasury of said state, may be used by said Trustees in building and maintaining upon the lands of the University, suitable houses adapted to use, as family residences, for the use of members of the Faculty of said University, for which use a fair and reasonable rent shall be paid to said University. Said buildings shall be erected under the provisions of Title Six of the Revised Statutes of Ohio, and the said Trustees shall annually report to the Governor a detailed statement of receipts and disbursements in the execution of the trusts under the provisions of this act."

The advantages of having the professors located in the immediate vicinity of the University, and the securing of this end without loss to



the University, of any portion of its annual income, were alluded to in the last report. Subsequent consideration of the matter strengthened those convictions, and the Board decided to avail themselves of the liberty given them in the act recited above. Contracts were accordingly entered into for the erection of three residences; one of brick, with 10 rooms, at a cost of \$5,799.92, another of brick, of 8 rooms, at a cost of \$4,524. and the third, a frame of 10 rooms, at a cost of \$4,800.00, aggregating in all \$15,123.92. As shown by the last report of the Treasurer, there was remaining of this fund "uncertified into the State Treasury," \$8,433.25. Since that time, the amount received from cash sales and interest notes given in purchase of these lands less the expense incident thereto, is \$6,929.76; so that the sum now available for this purpose aggregates \$15,363.01.\* These structures have been placed fronting the line of the new entrance from High Street to the campus, and in capacity have been accommodated to the varying wants of the families of the professors wishing to occupy them. This difference in size and design is also more pleasing and attractive to the eye than any effect that could have been produced by uniformity in construction. The policy of further increasing the number of these buildings as rapidly as the collections of money will admit, will doubtless be adhered to until the small fund remaining shall have been exhausted.

Wishing to learn as much as possible concerning the financial condition and patronage of other similar institutions, a circular was prepared and addressed to the proper authorities in thirty-seven States of the Union, known to have established colleges upon the basis of the Congressional Land Grant of 1862. These circulars embraced inquiries concerning the following matters :

- 1st. *When did your institution go into operation ?.....*
- 2d. *What was the largest number of students in attendance during the last collegiate year ?.....*
- 3d. *What is the present amount of the Endowment Fund, as derived from the sale of Land Scrip ? .....*
- 4th. *What is the present amount of Endowment from any other source ?.....*
- 5th. *What is the Annual Income from both the above sources ?.....*
- 6th. *How much money, in the aggregate, has the Legislature of your State appropriated, to your Institution, since its establishment, for the following purposes, viz. :*

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\* See Treasurer's report for Va. Military Land Fund.

- (a) For buildings.....
  - (b) For equipment and supplies.....
  - (c) For general support and maintenance.....
  - (d) For Library .....
  - (e) For Farm and appurtenances.....
- 7th. How much land is owned by the Institution ?.. .....

Only 26 States have responded to these inquiries, and but few of them as fully and definitely as was desired. In order, however, that your Excellency and the Legislature of the State may be informed, at least approximately, concerning a matter identical in purpose and of equal and *common* interest to all the states, a tabulated statement, containing the main facts has been prepared and is herewith submitted:

## ANNUAL REPORT.

[illegible]

# OHIO STATE UNIVERSITY.

11

	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Nebraska	New Hampshire	New Jersey	New York	North Carolina	Ohio	Oregon	Pennsylvania	Rhode Island	South Carolina	Tennessee	Texas	Vermont	Virginia	West Virginia	Wisconsin
	Agricultural College	State Agr College	College of Agricul and Mechanical Arts	College of Agricul and Mechanical Arts	Agr and Mech Col	Agricultural College	College of Agricul and Mechanical Arts	Scientific School	College of Agricul and Mechanical Arts	College of Agricul and Mechanical Arts	Ohio State University	State Agr. College	Penn State College	Brown Univ Agr. and Mech. Dep't	Agricul. College and Mech Inst	Tenn. Agr College	Agr and Mech Col	State Agr. College	Agr and Mech Col.	W.Va. Univ. Agr Dep't	College of Arts
	1867	1871	1879	1879	1879	1871	1871	1872	1868	1875	1873	1873	1873	1873	1873	1869	1878	1878	1872	1872	1872
	96	214	185	185	185	185	185	185	386	109	242	251	251	251	251	251	251	251	251	251	251
	145,000 00	339,000 32	575,000 00	575,000 00	575,000 00	575,000 00	575,000 00	575,000 00	575,000 00	575,000 00	575,000 00	575,000 00	575,000 00	575,000 00	575,000 00	575,000 00	575,000 00	575,000 00	575,000 00	575,000 00	575,000 00
	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00	98,000 00
	13,868 00	22,000 00	35,000 00	35,000 00	35,000 00	35,000 00	35,000 00	35,000 00	35,000 00	35,000 00	35,000 00	35,000 00	35,000 00	35,000 00	35,000 00	35,000 00	35,000 00	35,000 00	35,000 00	35,000 00	35,000 00
	100,000	100,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000
	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000
	50,000 00	50,000 00	300,000 00	300,000 00	300,000 00	300,000 00	300,000 00	300,000 00	300,000 00	300,000 00	300,000 00	300,000 00	300,000 00	300,000 00	300,000 00	300,000 00	300,000 00	300,000 00	300,000 00	300,000 00	300,000 00
	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
	283	676	676	676	676	676	676	676	676	676	676	676	676	676	676	676	676	676	676	676	676

a No females.  
c Endowment from old college.  
e Land not sold.

\* None reported.  
b From annual tax.  
d Not organized.

\* None reported.  
b From annual tax.  
d Not organized.

Quite a number of the institutions named above have no independent organization, but have been associated with pre-existent universities under the name of "colleges," "institutes," and "departments of agriculture and mechanical arts." In such cases, therefore, any comparison made to determine the relative success attained in the different States, the circumstances pro and con should be estimated, it being admitted, as a general rule, that through the alliance of these Congressional Colleges (so-called) with the old State institutions, the former come to an immediate inheritance of local popularity, and, most frequently, of additional monetary endowments, contributing, in some measure, both to the patronage and teaching force; elements which others, starting out on a separate career, cannot control. On the other hand, the dwarfing tendencies of unwise restrictions imposed by these old institutions upon the new under a joint control, prevent that rapid and strong development which time and a liberal course of management are sure to bring to independent organizations.

Other conditions also must modify any estimate of relative success. Among these is the *time* that the institution has been in operation. Although the Congressional grant was made to all the States at the same date, and was equal in amount to population (being in the ratio of 30,000 acres of land to each State Senator and Representative in Congress), some of the States did not accept the grant at once, and others, after accepting its conditions, continued to hold the land for a considerable period of time; or else, having sold the lands, held the parent fund for some years at interest before any positive organization was effected, thereby, greatly increasing the amount of available endowment.

There are facts, however, contained in the table by which it seems that the prosperity of any of these institutions may be graduated. The immediate annual revenue available for needed expenditures in the line of instruction, and the supplementary State appropriations for other unprovided wants largely measure the success in any given case. If our own institution is in any way exceptional to this general rule, the difference can only arise from the unconsidered, yet liberal amount donated by the county of Franklin, and used in the purchase of the land and the erection, at its very beginning, of the main college building, the dormitories and farm-houses.

Of the amount reported in the table as appropriated by the State of Ohio, \$10,650.00 was for the expenses of the Trustees in selecting a location for the college, and in the management of its affairs. If the remaining sum of \$45,500.00, stretching over a period of eleven years, should be construed as an expression of the liberality of the State, or its apprecia-

tion of industrial education among her citizens, it would be doing an act of injustice to her honor and her principles, for the State has always been liberal in contributing to the cause of education. The Trustees have heretofore asked State aid for the more pressing wants only of the University, where, upon economic principles, the largest results of good could come through its expenditure.

The Board still continues to recognize the necessity of enlarged facilities for the prosecution of satisfactory horticultural and agricultural work and instruction, and will renew its application to the Legislature for appropriations to these objects. The want of State aid in these departments was deeply felt a year ago, and would have been pressed upon the attention of the General Assembly had not the imperative wants of the University in other directions where delay would have imperilled valuable interests, required immediate attention. The Professor of Horticulture, in his last annual report, makes use of the following language:

I would call attention to the fact that, for several years past, the utter want of facilities for any horticultural instruction at the University has been the subject of equally just and severe criticism. Not a dollar has been appropriated by the State for this vitally important purpose. The department, as it stands to-day, has scarcely a single appliance—even such as the humblest nurseryman, fruit-culturist, or florist is obliged to secure in order to commence his operations. There may have been good reasons why this is the case, but they no longer exist. It is high time, in this age of universal progress, that this department do something.

The imperative needs of the department are as follows:

1. In order to do efficient work, and make the department really useful in the way of instruction and experimentation, we require a separate building dedicated to Botany and Horticulture. Upon the first floor of this building there should be a well-furnished class-room and suitably appointed laboratories; also, an office and seed-room. The second story should contain the museum and store-rooms. There should be a capacious frost-proof basement for the storage of fruit and garden products, for stocks, root-grafts, etc., for the nursery, and rooms where many of the practical horticultural operations could be carried on. Such a building can be erected and properly equipped for about ten thousand dollars.

2. We need a neat, well-constructed green-house—not an expensive conservatory—but a structure adapted to the propagation and preservation of plants for study by the students of Botany, for the raising of bedding plants for the college grounds, and for raising cuttings and seedlings of fruits, ornamental plants, vegetables, etc., needed in the garden and nursery. Such a structure is also necessary merely to illustrate the subject of plant-culture under glass. It should be erected in connection with the building above mentioned, and constructed in the most approved modern style, with the best heating apparatus. The cost should not exceed five thousand dollars.

3. We need a dwelling-house for the Professor of Botany and Horticulture.

Additional reasons for such buildings is found in the fact that, under the act establishing an Agricultural Experimental Station, passed during the last session of the General Assembly, the station has been located on the grounds of the University, and Professor Lazenby invested with the directorship. Among other provisions of the act, section 5 recites that

"The Board of Control shall locate said station and shall appoint a competent director, who shall have the general management and oversight of the experiments and investigations necessary to carry out the objects of the station."

These objects can not be reached without provision being made in the way of buildings for experimentation, storage of soils and seeds, and like important purposes.

The terms of the agreement between the Trustees of the University and the Board of Control, locating the station at the University and its management, are set forth in detail in the proceedings of the Board of date August 1, 1882, and further reference to them need not be made here.

The act creating a Meteorological Bureau at the Ohio State University, passed April 17, 1882, and appointing the Professor of Physics (T. C. Mendenhall) as President of the Board, with certain necessary powers for carrying on the same, requires that monthly and annual reports of the expenditures and observations be made *directly* to the Governor by the Professor in charge. No reference to its operations are made, therefore, in this report.

The course of lectures for farmers delivered at the University during the past winter, on various topics connected with Agriculture, Horticulture, Botany, and kindred subjects, called to the University the usual large attendance of intelligent farmers from different sections of the State. Their expressions of satisfaction and appreciation at the conclusion of the course, will warrant its continuance. This desirable connection between the agricultural portion of our community and the University was further extended through the medium of what are called Farmers' Institutes, which are held in many counties of the State under the joint management of the Ohio State Board of Agriculture and the University. A number of the Professors, by and with the consent of the Board, have been in attendance upon these meetings during the past season, and by their lectures on subjects of general interest, and by social interchange have done much to make known the general aim and liberal purposes of the University.

The Board regards the continuance of such a course one of the best

means of thoroughly advertising the institution, and thereby bringing its benefits to the notice of a larger class of citizens than could be reached otherwise.

The expenses of the professors in going to and returning from these institutes were borne largely by the University, and arrangements were made by which their absence from the lecture-room would work the smallest possible detriment to their classes.

By reason of the retirement of the Farm Manager, and the introduction of a Professor of Horticulture and Botany, a change in the system of managing the farm has been made. Instead of being exclusively under the control of a farm manager, the Farm Committee of the Board made an apportionment of the land, implements, and labor between the Professor of Agriculture and the Professor of Horticulture, allowing the employment of a competent clerk for the joint use of each, in the keeping of all accounts, records of experiments, and seeing to the execution of work ordered by both. Other matters pertaining to the buildings, stock, etc., on the farm, fall exclusively to the care and control of the Professor of Agriculture. Each professor, therefore, has had separate supervision of his part of the general work, and the ordering of all details arising therefrom. The reports of these professors, containing much valuable information, will appear in full elsewhere in the body of this report.

Dr. Townshend was authorized to attend the convention of Agricultural Professors, held last June at Ames, Iowa. These conferences, among scholarly gentlemen of large observation and experience, must result in great advantage to the vital interest which they represent. An invitation to hold a session of the convention at the Ohio State University at some future time was extended and accepted.

The appropriation of \$1,500 by the State "for ordinary repairs," has enabled the Board to keep the buildings in good condition. The repairs made have been chiefly to the roofs, chimneys, gas and steam pipes, and boilers, with less expenditures in plastering, glazing and painting. In the larger dormitory, six additional rooms have been fitted up. The heavy influx of students has called into requisition every available room, and many more could be used. The dormitories are now answering a good purpose in the advantages which they offer for cheap living to students of limited means. Their management is in every way satisfactory.

Insurance to the amount of \$31,266 has been renewed during the year; \$17,666 of this amount is on the contents of the buildings. A complete inventory of all apparatus and equipments of every kind be-



longing to each department has been prepared. These inventories are preserved in book form, and a valuation has been fixed, wherever admissible, to the different articles named. The aggregate of valuation, including the library, reaches \$26,871.75.

The condition of the *internal* affairs of the institution continues to be highly satisfactory. The number of professors remains unchanged, and their department work is much the same as heretofore.

In order to make the annual financial exhibit of the Board clearly intelligible, it is recommended that such a change in the law regulating the calculation of the interest upon the Endowment Fund be made as will make the calculation of such interest conform to the *fiscal* year of the State; that is, that the interest on the permanent fund be computed to the 15th of May and the 15th of November, annually, instead of the 1st of January and the 1st of July, as at present.

“The course of instruction pursued, the number of students in the several departments, the amount of receipts and disbursements, and for what the disbursements were made,” together with the statements of any experiments made, their cost and results, and other matters affecting the management of the University, are set forth in the accompanying reports of the officers in charge.

In conclusion, the Board desires to express its appreciation of the deep interest your Excellency has ever manifested in the University, and of your generous support of the Board in its management of this important State trust.

ALBERT ALLEN, *Sec'y.*

## REPORT OF THE PRESIDENT.

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OHIO STATE UNIVERSITY, COLUMBUS, *November 14, 1882.*

*Hon. James B. Jamison, President of the Board of Trustees:*

SIR: I have the honor to transmit my second annual report, including reports from the various departments of the University.

The rapid growth of the University during the past year is exhibited in the large increase in the number of students, in the additional buildings and equipments provided by the Legislature, and in corresponding developments of the internal organization of the institution.

The following tabulated statement shows, at a glance, the rate of increase in the number of students:

In November, 1873, there were 27 students, from 10 counties.

"	1874	"	59	"	22	"
"	1875	"	99	"	39	"
"	1876	"	120	"	42	"
"	1877	"	211	"	50	"
"	1878	"	198	"	52	"
"	1879	"	195	"	56	"
"	1880	"	235	"	61	"
"	1881	"	290	"	56	"
"	1882	"	340	"	61	"

Quite a number of applicants were rejected because of insufficient preparation. The Preparatory department certainly affords a fair opportunity for pupils coming from the common schools and high schools to enter the University. The necessity of this two years course of preparatory studies is manifest from the fact that even graduates of many of the high schools of the State are not prepared to enter the Freshman class in any of the seven courses leading to degrees.

It is doubtless a great advantage to the students in the preparatory course to receive instructions from University Professors; but it is necessary to bear in mind that such training is not the end for which the University was endowed, and that a heavy draft is made upon the energies and the time of Professors who should devote themselves to higher educational work as far as possible. In the course of time it may become necessary to cut off the preparatory work and apply the resources of the University exclusively to collegiate and higher education. But

for the present it is plainly the demand of the State that we continue the existing policy of affording a full and fair opportunity to the primary schools of the State to make connection with the courses of study in the University.

Already the rapid increase in the number of students creates the necessity of providing more accommodations and additional instructors. Happily for the want of space in several departments, the removal of the departments of Chemistry and Mining and Metallurgy, at the beginning of the winter term, into the commodious laboratories which will then be completed, will enable the Faculty to provide more comfortable rooms for many crowded classes. Yet even the large increase of space thus acquired will not relieve certain pressing demands for more room to which I must presently refer, while the ratio of increase in the number of students will soon again overflow the spaces vacated by the departments removed into the laboratory building. So far as recitation rooms are concerned, therefore, we shall get along comfortably during the latter part of the current year, and perhaps longer.

But the necessity of additional instructors is a more serious problem. To any person competent to judge of teaching, the difficulties appear in the single statement that a Faculty of sixteen, aided by five or six assistants, undertake to instruct 340 students in courses of study leading to seven different degrees through six years of preparatory and collegiate work. The Board wisely granted to Professor Tuttle, of the department of Zoology and Comparative Anatomy, a leave of absence for the current year, in order to pursue original investigations, which will doubtless result in adding much to the efficiency of his already superior work. It is certainly an important feature of the policy of this University to grant leave of absence, after years of faithful service, to a professor, who gives proof that by a period of freedom for original research he can lift his department to the highest grade of excellence in University work. Mr. Horace L. Wilgus, one of our graduates, and Mr. Clarence C. Green have charge of classes in Elementary Physiology and Zoology during Professor Tuttle's absence, while more advanced work is postponed until his return.

The State has laid the University under tribute for the services of Professor Orton as State Geologist; and, notwithstanding he labored with a corps of assistants during the entire summer to complete the survey of materials for the forthcoming volume on the Economic Geology of the State, the magnitude of the work has made it necessary for the Board to grant Professor Orton leave of absence for the present term. The Professor of Mining and Metallurgy has taken charge of the Junior

class in Geology in Professor Orton's absence, while temporary assistance has been provided for other classes. Rev. A. C. Hirst, formerly professor in Ohio University at Athens, and Mr. McCoard have been engaged for the present term to teach sections of preparatory classes in Latin and Algebra.

But even with these acceptable additions to the corps of instructors, the fact remains that many classes are too large to be thoroughly taught. It is nothing to the point that the instruction may be as efficient as the average of college work. It is the duty of the State University to do the very best work possible; and it should therefore be supplied with the requisite number of thoroughly competent instructors. This institution, though opened only nine years ago, has earned an enviable reputation throughout the country for the thoroughness and excellence of its educational work. But such good results have been due not merely to superior equipments in the hands of an able Faculty, but also to the fact that hitherto the various classes have been small enough for the application of thorough methods of instruction. At the present rate of growth, however, the best methods of instruction can not be applied for even a year or two longer without increasing the number of instructors. This criticism applies to some of the college classes, as well as to nearly all the preparatory classes. In most of the college classes in the several departments of the University the professors are doing most excellent work, which it would be difficult to surpass in any college in the country; but in the preparatory course the work falls short of what the State University ought to do, notwithstanding the superior equipments which have been provided. The classes are divided as much as possible, but it is a physical impossibility for the ablest teacher to instruct thoroughly in languages or in mathematics classes including from 40 to 60 students.

It becomes my duty, therefore, to call the attention of your honorable body to the necessity which the constant increase in the number of students will impose upon you of adopting measures for increasing the corps of instructors in the near future, or of limiting the number of students. Their number can be diminished either by charging a sufficient amount of tuition in the preparatory department, or by cutting off one or both years of the preparatory course. It seems to me to be altogether desirable neither to charge tuition nor to cut off the preparatory course in the near future.

As I have already intimated, the Faculty have adopted a better organization of the students, which seemed to be required by the growth of the University. This organization was put into operation with the

beginning of the current year. Hitherto students have been divided into four groups: Regular students, those included in the four college classes; Special students, those having attained college rank by completing preparatory work, and thereby permitted to select studies; Preparatory students, those pursuing regular preparatory studies; and Unclassified students, all not admitted to any of the three groups already named. Such a classification grew out of the large liberty of election accorded to students. While many of the unclassified students were pursuing successfully advanced work in particular lines, the Faculty became convinced that there was much irregularity due to a lack of definite purpose in many cases and to mere whims in not a few.

It was therefore not a desire to depart from the liberal policy which should always characterize the State University of affording special facilities for particular studies to students having definite aims, but rather a determination to secure the best training in all courses of study, which led the Faculty to organize the various departments of the University into four schools, designated as follows:

*The School of Arts and Philosophy*, including those studies which enter into the courses leading to the degrees of Bachelor of Arts and Bachelor of Philosophy.

*The School of Science*, including those which enter into the course leading to the degree of Bachelor of Science.

*The School of Engineering*, including those studies which enter into the courses leading to the degrees of Civil Engineer, Mechanical Engineer, and Mining Engineer.

*The School of Agriculture*, including those studies leading to the degree of Bachelor of Agriculture.

The Faculty of the University has been subdivided into committees corresponding with these schools, and all matters pertaining to the studies of students in any school, or to minor discipline therein, are under the control of the committee of said school.

The committees are as follows:

For the School of Arts and Philosophy—the President, the Professors of Latin and Greek, History, Geology, Chemistry, and French and German.

For the School of Science—the President, the Professors of Mathematics, Chemistry, Physics, Geology, and Zoology and Anatomy.

For the School of Engineering—the President, the Professors of Civil Engineering, Mechanical Engineering, Mining Engineering, Physics, and Drawing.

For the School of Agriculture—the President, the Professors of

Agriculture, Horticulture and Botany, Mechanics, Metallurgy, and Zoology.

Every student (resident graduates alone excepted) is required to enter one of these schools, or in case of irregularity, will be assigned to the school in which the greater part of the student's work may be found. There are no unclassified students.

All students in each school are regarded as belonging to one of two groups: first, those whose purpose it is to enter upon one of the regular courses of study with the expectation of taking its degree; second, those who come to the University for the purpose of pursuing some special study or line of work, and who do not expect to take a degree.

The courses of study leading to the various degrees having been arranged by the Faculty in the order which they believe to be the best adapted to the general requirements of students, *all who do not belong to the second of the groups indicated* will be required to enter upon the regular work of the college classes to which they belong, or in case of present irregularity, to remove such irregularity as speedily as practicable, in the manner prescribed by the committee of the school in which they are classed, and no such student will be allowed to take more or other than his regular studies without presenting a request with reason therefor to his committee, and receiving its consent. Such consent may be revoked at any time when it may seem advisable to do so.

Students belonging to the second group, viz.: those coming to the University for a limited time, with the definite purpose of pursuing some special line of work, will in each case enter the school in which their proposed work is chiefly included, and shall lay before the committee a statement of the end in view, the studies proposed for the accomplishment of that end, and the probable period of residence.

While it will be the purpose of each committee, in accordance with the well established policy of the University, to allow to such students full freedom in the selection of the branches which they desire to pursue, subject only to the necessary limitations that they are prepared to take up the branches they select, and that such branches are in accordance with the end proposed, it is also their intention to hold students as regularly to the performance of their accepted schemes of work as they do the members of the first group to their prescribed course of study; and they will refuse admission to this group to all of whose definiteness of purpose or fitness to undertake the work proposed they fail to receive satisfactory evidence.

It gives me pleasure to report that the Battalion of Cadets is in a

very excellent condition. There are now over two hundred students in the ranks. They are organized into four companies. With the beginning of the present term the discipline was made more rigid in minor matters than it was last year, and the result is obviously advantageous to all the interests of the University.

No able-bodied student is excused from the requirements of the drill, except a very few who are excused for want of means to purchase the uniform. In case of physical disability, a physician's certificate is required. The drill takes place four times a week, and occupies three-quarters of an hour at noon. It is made a part of every course of studies up to the beginning of the Junior year. Juniors and Seniors are done with the drill, but may voluntarily retain membership in the Battalion, which some desire to do. I beg leave to record my appreciation of this most excellent feature of our University system, and to declare my judgment that no equal portion of time devoted to other work in any department of the University produces larger and better results than the drill, in all that relates to the education of the citizen.

The two dormitories are filled with students, and many others would be glad to gain admission if there were room. During the past year the conduct of the young men in the dormitories was so excellent that I had no occasion for even the least exercise of discipline. By your direction the management of the dormitories is placed in the hands of the President of the University. I have simply followed the wise method of my predecessor, President Orton. The amount of care involved in the management of the dormitories is really trifling, in view of the constant and unexcelled good conduct of the young men.

There is no difficulty in obtaining suitable boarding places for students in private families, but the cost of living in such families is from one to two dollars per week more than the expenses in the larger dormitory.

It would be an obvious gain to the University if another dormitory were provided for the young men. In this connection let me call the attention of the Board to the need of a hall for the young ladies. There are now forty-one in the University. They have all signed a petition to the Board of Trustees, asking that a boarding hall be provided for themselves on the University grounds.

I heartily endorse the petition. The young women are quite as clearly entitled to such accommodations as are the young men. Indeed, it is simply unjust to impose upon young ladies the necessity of higher expenses in obtaining their education than young men are required to pay. Surely, this University knows by experience that



young women are wholly competent in every way to do University work in the same classes with young men without asking or receiving odds on account of their sex. Moreover, on the score of discipline for all minor delinquencies, it is so seldom that a young lady is reported to me from any department of the University that there would be no need of keeping any record at all, if the young men were as faithful and diligent as the young ladies. And as for the personal behavior of the young ladies, both in and out of the class-rooms, it not only needs no record of short-comings, but is such a positive good influence upon the whole working order of the University, that we could not for any consideration be induced to part with such moral power, even if regarded merely as an educational factor. I know, of course, what has been said, and will continue to be said respecting the collegiate education of young ladies in the same classes with young men by those who speak without any experimental knowledge of the subject. I sympathize with some, at least, of the conservative feelings which give rise to the difficulties such persons are wont to prophesy. But the fact remains that these difficulties exist solely in the imaginations and prejudices of the persons that describe them. It would be wholly amusing, if it were not partly pathetic, to read the discussions now going on in some of the oldest universities and colleges in the East in regard to extending the same privileges of education to young women, which the young men have hitherto exclusively enjoyed. To continue a custom which is based upon wrong, will never make it right.

Happily for this University, young ladies were admitted at the beginning upon equal terms with the young men, and experience has justified the policy as being right in every way. But we now have a sufficient number of young ladies to make it desirable to erect a boarding hall upon the University grounds, as similar institutions have done with complete success. No reason that will bear examination can be brought against this petition of the young ladies, and I trust the matter will receive the favorable consideration of the Board.

The Legislature last winter provided for some of the pressing wants of the University in a manner that was very gratifying. It appropriated \$20,000 for the erection of laboratories for the departments of Chemistry and Mining and Metallurgy. The building is now nearly completed, and will be occupied at the beginning of next term. It covers an area somewhat more than 8000 square feet. If extended in one direction, it would be 200 feet long, and over 40 feet wide. It is in the form of the block letter **T**, the front measuring 160 feet, and the center 80 feet in depth. The building is two storeys high. The upper



storey is assigned to the department of General and Applied Chemistry; the lower storey to the department of Mining and Metallurgy, together with the department of Agricultural Chemistry, yet to be established.

The laboratory of General and Applied Chemistry is modeled after the great laboratory of Leipzig. There is a fine lecture-room, well lighted from the east and west sides, 40 feet square, with a high ceiling. The seats for students are raised in tiers, affording a clear view of the lecture table. Back of this table is the preparation room. At one end of the table a balcony is arranged under the open sky for exceptionally offensive reactions. The walls of the lecture-room will contain cases of specimens illustrative of lectures, together with diagrams and charts, setting forth the ascertained facts and principles of Chemistry.

The west wing of the upper storey is devoted to qualitative analysis. It contains a large room, lighted on both sides, fitted with six special hoods, a large steam hood, three large poison hoods, and accommodations for thirty students at a time. Adjoining this laboratory are two rooms of general utility, one assigned to those operations in which poisonous or unpleasant gases are evolved, the other to large operations requiring the use of the forge, the blow-pipe, the workman's bench, etc.

The east wing of this storey is devoted to quantitative analysis. It has accommodations for sixteen students at a time, and is provided with the accessories of hoods before described. At the extreme end of the wing are four rooms assigned to (1) balances, (2) reference books, (3) gas analysis, (4) combustions, besides a closet for spectroscopic work.

Both of these analytical laboratories are constructed with reference to the best possible *ventilation*. Accordingly, each laboratory in addition to its hoods, has four nine-inch flues that *must* remain open whatever may be the theories or practices of the janitor. It has also, subject to the janitor, an opening extending the whole length of the ceiling and open to the sky. It has a transom for each window, opening inwards, easily controlled, while all the windows are so constructed that they can be thrown entirely open at once, whenever it may be desired to fill the laboratory speedily with fresh air. It is hoped that these devices will accomplish the all-important work of ventilation without requiring a very large expenditure of heat.

Besides the lecture-room and laboratories thus described, there are several other rooms in this upper storey—(1) the private laboratory of the Professor, (2) a working-room for his assistant, (3) store-room, (4) distillation-room.

The space needed to light up the hall will have on both walls cases

containing specimens illustrative of Industrial Chemistry, always open to inspection.

The department of Mining and Metallurgy occupies two-thirds of the space in the lower storey—the west and north wings. The lecture-room is in the west wing. Connected with it is a large room for the mineralogical and metallurgical collections. The department is constantly receiving ores, slags, and metals, for analysis and assay and examination, and a collection is making of a complete series of such materials illustrating the occurrence and process of extraction of the various metals.

Also, in connection with the lecture-room, is a private room and laboratory for the Professor, where the analysis for the State Geological Survey and such similar work as pertains to the department can be done.

Opening into the collection-room is a small laboratory for blowpipe analysis and determinative mineralogy, where students are provided with tables equipped with reagents and apparatus for blow-pipe work. It is intended that each student shall have training in experimental determination and testing of minerals. This laboratory is provided with hoods, and is well lighted.

The assay laboratory occupies the north wing on the ground floor. It is forty feet square. The floor is several feet lower than that of the east and west wings of this lower storey, and the increased height of the ceiling in the assay laboratory thus acquired is of great advantage in affording relief from the heat and smoke arising from assay furnaces. The floor is made of cement, and the furnaces are so arranged as to discharge their ashes into the basement, thus preventing the accumulation of dust and dirt in the laboratory.

The laboratory contains flues for eight crucible furnaces, and one large double muffle furnace, sufficient to accommodate twenty students. It is fitted also with flues for acid hoods, sand-baths, etc. Four large desks are provided with accommodations for sixteen students at a time.

Opening into this laboratory are two smaller rooms for balances and the apparatus for bullion assay, which requires protection from rapid changes of temperature. The laboratory connects directly with a coke cellar in the basement.

In the attic of the building there is an iron reservoir for water; the basement contains a cellar eight feet deep. The whole building is of brick, with slate roof, and presents a very satisfactory appearance.

The Legislature also organized an Agricultural Experiment Station and appropriated \$3,000 for the expenses of the first year. The Board

of Control located the station at the University, and ample space upon the grounds has been set apart for carrying on experiments upon a scale commensurate with the needs of the State. The full report of these experiments, which will be issued by the Board of Control, will doubtless show at once the great need and the great value of this experiment station to the State, and the University may well rejoice in its establishment.

Professor Lazenby, of the department of Horticulture and Botany, has been appointed Director of the Experimental Station, and Mr. William B. Alwood has been selected as Foreman.

The Legislature likewise established a State Meteorological Bureau and appointed the Professor of Physics in the State University as Director of the Bureau. An appropriation of \$2,000 was made. Standard instruments of observation have been provided at the University, and corresponding instruments for voluntary observers in different parts of the State—one in each Congressional district. The Bureau will issue monthly reports of meteorological observations, which cannot fail to be of great economic value when joined with the monthly crop reports, issued by the State Board of Agriculture, to say nothing of the scientific value of such observations.

The Legislature also authorized the expenditure of funds arising from the sale of Virginia Military Lands for the purpose of erecting additional residences for Professors upon the University grounds. Thus far three houses have been erected, and will soon be ready for as many Professors. The University will gain much by the increased efficiency of these members of the Faculty, who have hitherto lived several miles away from their work. We greatly need several more residences in order to locate as many as possible of the Professors upon the University grounds. The time and labor and skill of the Professors, gained to the University by bringing the Faculty together in homes upon the campus, are far more valuable even in the market than the cost of the necessary residences.

In the beginning of this report I alluded to certain accommodations greatly needed in addition to the rooms for classes now happily provided for by the erection of the new laboratories. I refer to the utter lack of a suitable place in which to hold commencement exercises and public assemblies, and to the need of a drill hall. The lecture-room is now barely sufficient to afford seats for the students alone. At commencement, even if all the students were excluded from the room, it would still be densely crowded with a small minority of the people that endeavor to attend these closing exercises of the year, and a great many

persons declare that they make no effort to come to the University on that day, because it is of no use to attempt to get into the assembly-room. Great interest was manifested at the recent commencement in the public performances of the graduating class, which were very creditable to the University. Surely ample accommodations ought to be provided for these most important performances, as well as for other and frequent assemblies of the people who may be invited to attend University exercises.

As to the drill hall, the need has become well-nigh imperative on account of the increase in the number of cadets. When the weather will not admit of out-door drill, which is frequently the case during the winter season, the drill must take place in the halls of the main building and be restricted almost wholly to the manual of arms. But even for this exercise there is now no room to spare, and if the number of students shall be increased next year by the usual ratio, it will be impossible to carry on the drill in an effective manner during bad weather.

I desire to call especial attention to the report of the department of Horticulture and Botany, and to renew and urge the recommendation made in my report a year ago, that a suitable building and appliances be provided for this newly organized and very important department of the University. At least \$15,000 is needed for this purpose. From every point of view this department ought to be thoroughly equipped at once. I need not enlarge upon the full report of Professor Lazenby, but cannot forbear to repeat with emphasis my conviction of our duty to press the wants of this department upon the attention of the Legislature.

In this connection let me refer to the lectures to farmers, which were delivered by the professors at the University during January last. There was a large attendance and unfailing interest. A similar course of lectures is arranged for January next. The date of the annual meeting of the Agricultural Convention was changed by action of the Legislature, so as to enable members of the Convention to attend this course of University lectures. During the course no Farmers' Institutes will be appointed by the State Board of Agriculture, so as to enable farmers from all sections of the State to attend the lectures at the University, as well as those to be delivered at the various Institutes. The services thus voluntarily rendered by the Professors during the past year, in different parts of the State, were well received by the large audiences that attended the Institutes. And there is no room for doubt that the farmers and other industrial classes so largely represented at these Institutes throughout the State, are awakening to the call for the thorough

equipment of the various departments of the University relating to Agriculture and the Mechanic Arts; and among these there is no department more needy of immediate equipment than the department of Horticulture and Botany.

I cannot refrain, while mentioning the great necessities of the University, from calling attention once more to the Library. Surely the Legislature ought to do something towards filling this vacuum. In addition to the appropriation of three hundred dollars for books, which the Board made for the current year, to be distributed by the President of the University among the various departments, a special appropriation of two hundred dollars was made for the classical department; and Professor Derby has obtained therewith 177 volumes of Teubner's Edition of Greek and Latin authors. These are beautifully bound, and form the proper nucleus of a classical library. The Board further appropriated one hundred dollars to purchase books for the department of Philosophy and Political Economy, making a total of \$600 for the library for the current year as compared with the usual appropriation of \$300.

But, while such additions to the library are very acceptable indeed, they fall far short of what is actually needed by the daily work of the various departments. The library has been utilized as far as possible as a reading-room. It may be too much to hope that the State will now provide a library building fully equipped, but we certainly need a large reading-room to be kept open at all hours. Such a reading-room is a real laboratory, equal in importance and practical value with any other.

I beg leave to submit herewith memoranda of the ordinary wants of the several departments:

In regard to the department of Philosophy and Political Economy, I have the honor to report that I am now engaged in teaching a class of Seniors in Ethics, of Juniors in Psychology, and of Sophmores in English—the Art of Discourse. There are 39 students in these classes. I also have charge, during the year, of the public rhetorical exercises of the college classes. These exercises are held once a week in the Lecture Room of the University. The Seniors deliver original orations, the lower classes declamations and essays. Much interest is manifested, and good work is done by every class. I have the honor to remain,

Very respectfully, yours,

WALTER QUINCY SCOTT.

*Ohio State University, November 15, 1882.*

## DEPARTMENT REPORTS.

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### DEPARTMENT OF GEOLOGY.

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*President Walter Quincy Scott:*

SIR: I present, herewith, the annual report of the department of Geology, and of my professorial work for the calendar year, which ends on November 15, 1882.

The full statements of the last annual report, as to the scope and character of the work of the department, it does not seem necessary to repeat. I will, accordingly, confine myself to the essential facts.

My classes for the year have been as follows:

Fall Term, 1881—Juniors, General Geology, daily, 10; 1st Preparatory, Physical Geography, Section A, daily, 37.

Winter Term, 1882—Juniors, General Geology, 3 days a week, 10; 1st Preparatory, Physical Geography, Section B, daily, 15.

Spring Term, 1882—Juniors, General Geology, 2 days a week, 10; Juniors Economic Geology, 3 days a week, 4.

In addition to the work of my own department, as shown above, I taught during these three terms the Second Preparatory Class in Latin, comprising 31 members.

The recitations of this class were daily. I also taught one section of the class in General History during the Spring term, which numbered 19 members, the recitations of which were daily.

The Rhetorical exercises of the college students were placed in my hands.

In April of the present year, the State Legislature made provision for a temporary resumption of the Geological Survey of the State, with which I have been connected during all of its course. I was appointed by Governor Foster to execute the work thus ordered. I hoped that I could finish that portion of it which would necessitate my absence from the city, during the summer vacation, but I was not able to do this, and I was therefore reluctantly compelled in September last to apply to the Board of Trustees for leave of absence during the present college term. My request was granted, and I was empowered to make such provision for my classes as should seem best on consultation with the President and Faculty.

My colleague, Professor Lord, generously offered to take charge of the exercise in General Geology of the Junior Class. The class numbers 22 members, and is making excellent progress. The two sections in Physical Geography of the First Preparatory Class, I turned over to two competent and faithful young men, both of whom had been successful teachers. The sections number 29 and 27, respectively, and the work of instruction is going forward in a satisfactory manner.

The class in Second Preparatory Latin, for which I am at present made responsible, numbers 39 members. For this class, I was fortunate enough to secure the services of an accomplished scholar and an experienced college officer, Rev. A. C. Hirst, of this city, under whom excellent work is going forward.

I am grateful to the Board for the unusual favor which they have accorded to me in this leave of absence. I shall return to my post next term to resume the varied duties of my professorship.

Very respectfully yours,

EDWARD ORTON.

*Ohio State University, November 14, 1882.*



## CHEMISTRY.

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*President Waller Quincy Scott.*

SIR: I have the honor to present this, my Tenth Annual Report of the Chemical Department of the University.

The number of pupils enrolled for the year ending June 21st, 1881, was:

In general chemistry..... 65

In analytical chemistry..... 23

The number of pupils enrolled for the year beginning September 14, 1882, is:

In general chemistry..... 88

In analytical chemistry..... 28

I am glad to be able to report a good record for cheerful and diligent work among the students in the Analytical Laboratory during the past year. Our crowded curriculum allows but two years to this course of study, which is barely sufficient time to lay a good foundation for intelligent and accurate work. For many reasons this is often cut short, and even by those who enter the University for "special work" in chemistry. The number of such students who are preparing to become pharmacists or physicians is steadily increasing, and I think it would be well to provide additional inducement for this class by a somewhat extended course in pharmacy and in materia medica. The various laboratories of the University offer unusual facilities for the collateral studies required. And I am moreover convinced that there is a growing demand for young men who have made such special preparation.

I regret to report that the progress of the class in General Chemistry, the last year, was not satisfactory. The average attainment was exceptionally low, although a few of its members acquitted themselves with credit.

The present year opens with bright auspices. The students in the Analytical Laboratory are, for the most part, taking the study from choice, and are, of course, willing to work. I expect that they will do well. So, also, I anticipate a good result from the general class. It is unusually large, and will be taught principally by lectures and frequent written recitations.

In the new laboratory a suite of rooms are provided for agricultural chemistry. I am led to believe that this important chair will not long remain unfilled.

As to the new laboratory, I have already given you a full account, and suppose that further mention is not required. It shows for itself that it is intended for work, and well adapted to the ends for which it was designed. I hope that there will be no delay in its completion and equipment. I believe that when finished it will be second to none in point of convenience.



I purchased for the reference library, last year, Fresenius's Zeitschrift—twenty-one volumes. These ought to be bound at once. We need more books of reference, and duplicates of the most important, and I hope that in the immediate future a way may be found to obtain for our use sets of the leading chemical journals. These are emphatically tools which no well regulated laboratory should be without.

Mr. David O'Brine, M.E., continues as my assistant. He has in successful operation a good sized class of voluntary students, in a course of lectures upon analytical operations. These lectures are exceedingly valuable, and, I have reason to know, are appreciated. I think Mr. O'Brine is deserving of a better recognition for his services to the University than he has yet received.

Very respectfully,

SIDNEY A. NORTON,

*Professor of Chemistry.*

*Ohio State University, November 14, 1882.*

## DEPARTMENT OF AGRICULTURE.

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*President Walter Quincy Scott :*

SIR: I respectfully submit the following report of work done during the past year by classes in Agriculture and Veterinary Science :

The junior class in Agriculture was occupied with the following studies :

1st term. Geology, and Chemistry of soils, their origin, description, composition, classification, adaptations and improvement, etc.

2nd term. Farm Crops, botanically and economically considered, modes of culture, insect enemies, etc.

3d term. Farm Management, accounts, buildings, fences, drainage, water supply, implements and machinery.

The senior class in Agriculture had the following :

1st term. Natural History of Domestic Animals, their varieties, characteristics and special adaptations, etc.

2nd term. Principles of Stock Feeding and Breeding.

3d term. Animal Products of the Farm, the dairy, wool-growing, etc., etc.

Since the last report these classes have had an average attendance of six students in each ; the interest manifested by students has been commendable, and their progress satisfactory.

The classes in Veterinary Science had for their work :

1st term. General Pathology, nature of disease, symptoms, causes of disease, classification of diseases, etc.

2nd term. General Therapeutics, principles of treatment, remedial agents their effects and classification, etc.

3d term. Special Pathology, diseases prevalent among Stock in Ohio individually considered.

The weekly Veterinary Clinic, which is still continued, has proved of great benefit. With some additional facilities, which it is hoped will be afforded, this department may be made of great utility.

A full report of the management of the University Farm, and of the results of experiments for the year will be made to the Board of Trustees.

The fourth annual course of *Lectures to Farmers*, given in January of the present year, was well attended, and the interest of former years appeared to be fully sustained. At the close of the lectures a meeting was held of those who had been in attendance, and the desire was formally and unanimously expressed for a similar course in January, 1883.

With great respect, yours truly,

N. S. TOWNSEND,  
*Professor of Agriculture.*

*Ohio State University, November 14, 1882.*

## DEPARTMENT OF MATHEMATICS AND CIVIL ENGINEERING.

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*President Walter Quincy Scott:*

SIR: I have the honor to submit the following report touching the work done in this Department for the year closing October 31, 1882:

Fall Term, 1881—Civil Engineering, 19; Surveying, 36; Geometry, 32; Analytical Geometry, 28; Algebra, 56.

Winter Term, 1882—Algebra, 34; Geometry, 37; Calculus, 25; Civil Engineering, 25; Descriptive Geometry, 33; Astronomy, 32.

Spring Term, 1882—Calculus, 24; Trigonometry, 44; Civil Engineering, 19; Descriptive Geometry, 29; Astronomy, 27.

Fall Term, 1882—Algebra, 49; Analytical Geometry, 45; Geometry, 35; Surveying, 37; Civil Engineering, 23. Total, 689.

The work in all the classes has been, in general, satisfactory. Field-work, for the classes in Engineering, is carried on in the fall and spring terms, every day, when the weather permits. It consists in leveling, measuring heights and distances, setting out curves, cross-sectioning, mapping with the plane table, manipulating the sextant and the solar compass—in fine, practicing in almost every kind of work pertaining to the business of the engineer.

In the winter session, where field-work is ordinarily impracticable, the classes are instructed in all kinds of drawing pertaining to engineers' work, viz.: platting, isometric, axonometric, and topographic drawing; shades and shadows, and the general principles of perspective.

Very respectfully submitted,

R. W. MCFARLAND,  
*Prof. Math. and Civil Eng.*

*Ohio State University, November 14, 1882.*

## DEPARTMENT OF MECHANICAL ENGINEERING.

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*President Walter Quincy Scott:*

SIR: I herewith present my annual report of work in the Mechanical Department.

Students of classes of fall term of 1881: Analytical Mechanics, 3; Thermodynamics, 2; Machine Drawing, 3; Mechanical Laboratory, 16.

Winter Term, 1882—Strength of Materials, 5; Machine Drawing, 4; Mechanism, 3; Prime Movers, 2; Mechanical Laboratory, 26.

Spring Term, 1882—Mechanism, 3; Machine Drawing, 2; Machinery and Millwork, 2; Mechanical Laboratory, 13; Advanced Calculus, 4.

Fall Term, 1882—Analytical Mechanics, 9; strength of Materials, 5; Thermodynamics, 3; Mechanical Laboratory, 14.

I beg leave to call attention to the fact that our Library is sadly deficient in works on Mechanical Engineering. It is to be regretted that our State and City Libraries contain almost nothing in this line, except some of the more common books, most of which are used as text-books. I have frequently called for books at these libraries for consultation, but have never found the book sought, except in one instance. I have therefore asked for \$50 with which a lot of books named on a separate sheet might be procured. This, however, will only serve for a beginning of the list that is needed.

Our Mechanical Laboratory is deficient in instruments of precision, such as standards of length, standard caliper gauges, standard screw-thread gauges, ring and plug gauges. We are in need of such appliances to the extent of \$500. These are needed for the higher exercises in practice, such as working to dimensions, and fitting. Means for higher experimentation were suggested in last year's report. Our need for these grows year by year, as the Department becomes filled with students of the higher subjects. Two thousand dollars could be expended with great advantage, and yet not carry the department beyond a fair comparison with the manufacturing appliances of the State.

Several specimens of materials and models have been added to the Mechanical Cabinet within the year, including a fine set of pieces of cold rolled iron from Jones & Laughlins, of Pittsburgh, and of case-hardened iron, illustrating the manufacture of finger guards for mowing machines, the latter being presented by the Champion Bar & Knife Co., of Springfield, Ohio.

Very respectfully, yours,

S. W. ROBINSON.

*Ohio State University, November 14, 1882.*

DEPARTMENT OF PHYSICS.

*President Walter Quincy Scott:*

SIR: I have the honor to submit the report of the Department of Physics for the past year:

Upon my return to the charge of this department, after an absence of three years, I found the instruments and appliances belonging to the same in excellent condition, and this must be attributed to the care and attention bestowed upon them by Professor Robinson, who, during that absence, had charge of both the departments of Physics and Mechanics.

About two years ago an appropriation was made for the purchase of a few instruments of precision, which were greatly needed in the Physical Laboratory. Some of these, principally a break circuit chronometer, by Vegus, and a chronograph, by Fauth & Co., have been received from the makers, and are now in daily use. A dividing engine, an instrument in great demand in laboratory work, was ordered long ago, from a well-known maker in Paris, and, I regret to say, has not yet been completed, but its arrival is confidently expected soon.

As a result of the changes made in the curriculum during the past year, the study of physics is now required in all of the courses, except that leading to the degree of Bachelor of Agriculture.

The students registered in this department last year were classified as follows:

Second Year, Preparatory .....	62
Sophomore Physics.....	13
Advanced Physics (Laboratory) .....	11

The large number of students in the Preparatory Class made a division of the class into two sections necessary.

The hour of recitation of one of these sections was necessarily the same as that for the Sophomore Class, and it was thus impossible for one instructor to do the work.

The department was fortunate in being able to secure aid from Mr. Newton M. Anderson, who, besides assisting in the instruction of the Preparatory class, rendered valuable service in connection with the laboratory work. I desire to place upon record my high appreciation of the value of Mr. Anderson's assistance, which was freely given throughout the year, and without cost to the University.

At the beginning of the present collegiate year, there was a marked increase in the number of students in this department, especially in the advanced work, the number being more than double that of the past year.

There were registered as follows:

Sophomore Physics.....	21
Advanced Physics (Laboratory) .....	21

The number of students in the Preparatory Class, which begins work with the opening of the second term, promises to be very large.

By the action of the Board of Trustees, Assistant Engineer F. H. Eldridge, U. S. Navy, who had been detailed by the Navy Department to give instruction in steam engineering in the University, was appointed Assistant Professor of Physics, and is now engaged in giving instruction in the department.

I am, yours truly,

T. C. MENDENHALL,

*Professor of Physics.*

*Ohio State University, November 14, 1882.*

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## DEPARTMENT OF MINING AND METALLURGY.

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*President Waller Quincy Scott:*

SIR: I have the honor to present the following report on the work of my department during the past year. In the winter and spring terms there were in the special classes of the course in Mining Engineering and Metallurgy, eight students, two of whom completing the course, received the degree of Mining Engineer last June.

The Freshman class in Mineralogy (spring term) contained twenty-eight students, making the total number in this department thirty-six.

The present fall term opens with eleven students in the advanced classes of the department.

During the past year the Mining Laboratory has been in constant operation. Among other work, nearly a hundred analyses of commercial fertilizers have been made for the State Board of Agriculture, and the results published in their monthly reports.

All the chemical work for the present Geological Survey is being done in the laboratory. Mr. W. J. Root, being employed as my assistant by the survey, is devoting his whole time to that work. I am assisted in my own work, and in that of the department, by Mr. Edward Orton, Jr.

There will be needed to cover the expenses of moving into and fitting up the new laboratory, now being built, a small appropriation; also, and most pressing, an appropriation to provide means of enlarging and replenishing the small collection of minerals, drawing and apparatus of the department.

Very respectfully,

NATHANIEL W. LORD.

*Professor of Mining and Metallurgy.*

*Ohio State University, November 14, 1882.*

## DEPARTMENT OF HISTORY AND ENGLISH.

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*President Walter Quincy Scott :*

SIR: I herewith respectfully submit a report of the work in my department for the college year of 1881-1882. My class rolls for that period make an exhibit as follows:

### *First Term.*

Senior Rhetoric.....	21
Junior (Advanced) History.....	21
Elementary U. S. History (I Section).....	23
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Total .....	65

### *Second Term.*

Junior (Advanced) History.....	16
Junior English.....	4
Elementary U. S. History (II Section).....	26
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Total.....	46

### *Third Term.*

Junior U. S. Constitutional History.....	13
Junior English.....	2
General History (I Section).....	32
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Total .....	47

Total enumeration of my classes for the year.....	158
Class in Anglo-Saxon, taught by President .....	8
Section of General History, taught by Professor Orton .....	18
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Total of classes in History and English..... 184

Throughout the year, I taught a class of thirty-eight once a week in Hart's Composition and Rhetoric.

A similar service was also performed by Miss Williams; while Professors Tuttle, Lord, and Derby, each taught a section of the First Preparatory Class in English Grammar.

The year's work in History was conducted according to the old curriculum. It will be observed that the classes were more than ordinarily large. The plan of instruction outlined in my last report was substantially carried out.

Courses of lectures on the political, commercial, social and economic institutions of Mediæval and Modern Europe were delivered in connection with the text-book work. The English Constitution, the Present Condition of the Great Powers, and the Constitutional History and Civil Polity of the United States were respectively treated by lecture.

The change in our course of study, planned last year, and put into effect at the beginning of the present term, gives to History its due prominence. Thereby the study of United States Constitutional History is pursued in semi-weekly lectures through the senior year of all the baccalaureate courses. English Constitutional History, and the Political History of Europe during the XIXth century, together are allotted the same amount of time in the course for Ph.B.

The study of Mediæval and Modern History is taken up in the Junior year of the Ph.B. course as formerly, except that it is limited to three recitation hours per week.

The English work, of which you generously took a share, was divided between the old and new courses. The Rhetoric, prescribed by the former, was taught by me in the first term, while you relieved me of the Anglo-Saxon.

In the second and third terms the English of the Junior year, as prescribed in the new course, came to me regularly. In the present term the full work assigned to both Junior and Senior years is upon me.

In the Junior year the Anglo-Saxon is studied for a term, both as a classic and as the medium of work in comparative philology. In the second and third terms the historical growth of our language through Middle into Modern English is pursued.

In the Senior year the first term is devoted to the study and criticism of selections from English authors; while the history of English and American literature is studied in the remaining terms.

My classes for the present term are constituted as follows:

Junior Anglo-Saxon (twice a week) .....	11
Senior English (three times a week) .....	4
Junior Ph.B. History (three times a week) .....	3
Senior Ph.B. English Constitution (twice a week) .....	6
Senior U. S. Constitution (twice a week) .....	9
Elementary U. S. History (daily) .....	32
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Total.....	65

The imperative need of the department is books.

Courses of instruction are completely organized and consistently carried out; the apparatus of investigation has been amply provided in the shape of printed reference lists; all the conditions for investigation are present but the one essential to the fullest success. The available materials at present are meagre and inadequate. Were a library provided, History and English could be pursued in the department with that thoroughness which true University work demands.

Respectfully submitted,

JOHN T. SHORT,  
*Professor of History and English.*

*Ohio State University, November 14, 1882.*



## DEPARTMENT OF GREEK AND LATIN LANGUAGES.

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*President Walter Quincy Scott:*

SIR: I have the honor to submit to you my annual report.

The enrollment for the current term is as follows:

Sophomore Latin .....	6
Freshman Latin .....	26
Second Preparatory Latin.....	39
First Preparatory Latin.....	59
Junior Greek.....	8
Sophomore Greek.....	4
Freshman Greek.....	19
Total.....	<hr/> 161

All the classes named above continue through the year, and will be increased by a few additional members who enter the University at the opening of the second and third terms.

The total enrollment for the corresponding term of 1881 was 118.

In the text-books used by the Preparatory Latin classes no change has been made, but, as an experiment, the Second Preparatory Class will read Cicero's Orations against Catiline before beginning Virgil's *Æneid*.

The department is under renewed obligations to Dr. Orton, who has once more generously undertaken the instruction of this class, and thus rendered very seasonable aid. During his temporary absence the class has been intrusted to the competent hands of Rev. A. C. Hirst.

The Freshmen in Greek take White's Lessons in place of Leighton's, which has been the text-book in previous years. It is my purpose to read different selections, or authors, with successive college classes, so that the work of any two consecutive years will not be identical, though of equal range and educational value; by this plan greater interest will be awakened in the study of the classic languages, and in the literature and institutions of Greece and Rome, without any loss in thoroughness, which might be apprehended from a wider course of reading.

The appropriation made by the Trustees last June has procured for the department a full set of the Teubner Library of Greek and Latin Classics, in 177 well-bound volumes. This collection, well-known for its excellence in all the essentials of a good text edition, makes an admirable nucleus for a well-equipped classical library. It is now easy for the student to verify a quotation, follow out references, and compare readings, far beyond the narrow limits of his text-book, and he can hardly help gaining a much more adequate conception of the range and wealth of classic literature.

A few books of a more popular character, bearing upon the history and antiquities of Greece and Rome, have been added to our equipment, which has been further increased by the purchase of two additional wall maps in the Kiepert Series, viz.: the Roman Empire, and Ancient Italy.

We still need, for the satisfactory study of Cæsar, maps of Ancient Gaul of such size that military movements can be followed by an entire class at once.

To Miss Minnie O. Scott and Mr. Charles C. Miller, my assistants in the work of instruction—the former having charge of one section of the First Preparatory Class in Latin, the latter of the Sophomores in Greek—I am indebted for intelligent and painstaking service.

The classes under my immediate care are the remaining section of the beginners in Latin, the Freshman and Sophomore classes in the same language, with the Freshman and Junior classes in Greek—in all, twenty-one recitations a week.

Respectfully submitted,

SAMUEL C. DERBY,  
*Professor of Latin and Greek.*

*Ohio State University, November 14, 1882.*

## DEPARTMENT OF BOTANY AND HORTICULTURE.

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*President Walter Quincy Scott :*

SIR: The following report of the work done and progress made in the Department of Botany and Horticulture during the year 1881-82 is respectfully submitted :

### INSTRUCTION.

A tabulated statement, given below, shows the subjects taught and the number of students in attendance since the organization of the department one year ago :

	Subject Taught.	No. of Students.	No. of Lectures per Week.	No. of hours of Laboratory or Field Work.
First Term.—	Economic Botany.....	10	5	..
	Special Botany.....	4	2	3
	Fruit Culture.....	7	5	2
Second Term.—	Physiological Botany.....	7	5	..
	Vegetable Gardening and Seed Growing.....	4	3	2
	Arboriculture and Practical Forestry.....	4	2	3
	Structural and Systematic Botany.....	65	4	5
Third Term.—	Practical Floriculture.....	6	3	2
	Landscape Gardening.....	6	2	2
	Special Study in Vegetable Histology and Botanical			
	Field Work.....	9	..	5

The above is a brief statement of the instruction given and the attendance during the past college year.

For the present term I am teaching the following classes:

10	Students in Economic Botany.
20	“ in Compositæ and Gramineæ.
3	“ in Fruit Culture.
2	“ in Special Botany.

The instruction is given mainly by lectures, supplemented by reviews, laboratory and field exercises. Each subject is treated in as practical a manner as it is possible for me to present it. In fact, the aim has been *to train* as well as *to teach*—to form habits and develop powers, rather than explain words and impart knowledge. Many students come to the University with the idea that they are to *receive* an education. I try to show them that they are here to *educate themselves*.

While I have used my best endeavors to systematize the students' work, to help them over difficulties—to advise and direct—to stimulate and encourage, I have not tried to do their work, but have kept constantly in view how best to prepare them readily and accurately to acquire knowledge for themselves.

The greatest drawback to the successful progress of the students in the classes of advanced Botany and Horticulture is defective preparation in elementary Botany. Those students who took the course in structural and systematic Botany last spring, and are continuing their studies in this department, are making much better progress than those who have not had elementary or preparatory work. Just how this defect can be best remedied is not easy to point out. One of two plans might be adopted. Either require an examination of all who have not had the preparatory work here, or move the Botany from the Preparatory Department to the Freshman year, in the regular college courses.

Despite this defect, however, the general progress of the students in all the different classes has been very satisfactory, only a few having failed to pass the examinations.

A number of the students are taking an enthusiastic interest in special botanical and horticultural work, and are doing efficient service in adding to the collections, and in otherwise aiding in building up and strengthening this newly organized department in the University.

#### APPARATUS AND COLLECTIONS.

During the year a good beginning has been made in the way of collecting illustrative material of various sorts for the use of the department. A collection has been obtained, which, it is hoped, will form the nucleus of one of the best botanical and horticultural museums in the country. Of course, this great end cannot be secured at once. It will take years to accomplish it. Yet, if the project receive the substantial aid and encouragement it deserves, no one can doubt as to the final successful result. Among the most valuable collections made the past season is one of over twenty-five hundred specimens, representing at least six hundred species and varieties of the flowering plants of Ohio. These have been carefully selected, pressed, and some of the best specimens mounted for a permanent Herbarium. The remainder will be used as material for study, and for making exchanges. In addition to this, quite large collections of fruits, grains, seeds of weeds, and useful plants, specimens of the woods of the United States, etc., have been made.

#### NEEDS OF THE DEPARTMENT.

The most urgent and imperative need of the department is a well-constructed green-house, together with suitably appointed lecture-room, laboratories, rooms for museum, storage, etc. The department cannot be considered well-equipped until it is thus provided for. We need the green-house for keeping a collection of useful and interesting plants for study; we need it for propagating plants for the college grounds and gardens; we need it for performing various experiments, and for illustrating every branch of the study of Botany and Horticulture. It is just as essential and necessary for the students in this department as a chemical laboratory is for the student in the department of chemistry. We do not want a showy, expensive conservatory, but a neat, practical structure in the modern style of brick, iron, and glass, heated by hot water, built in the most careful manner, and of the very best material. Some have thought that a green-house alone would meet all the requirements. But this is a mistake. In order to be at all useful, the green-house must be connected with and a part of the laboratories and class-room. To prove that this is not an

imaginative but an imperative need, I will simply say that no one of the different State Universities, founded like ours upon the National Land Grant of '62, is without such equipment. The need of additional dwelling-houses upon the campus still exists. One is especially demanded for the use of the foreman of the gardens; for without this convenience, it is next to impossible to secure the services of just the right man for this important position.

As a means of illustrating the instruction in Botany, the department has great need of a series of botanical models, maps and charts.

#### THE EXPERIMENT STATION.

It is a matter of congratulation that the State Agricultural Experiment Station is carrying on its investigations at the State University. Without the University the station could do but little, and without the Station the University would lose valuable means of training.

This combination of the means and efforts of both can scarcely fail to achieve results beneficial to all.

A full report of the experiments conducted, and the condition of the gardens, orchard, nursery, ornamental grounds, and whatever pertains to the different outdoor divisions of the department, has been prepared, and will be submitted to the Farm Committee before the next annual meeting of the Board of Trustees.

#### ACKNOWLEDGMENTS.

I have been most ably assisted throughout the past year by Mr. Will S. Devo, and Mr. W. J. Green, two special students in Botany and Horticulture, whose faithful painstaking work has added much to the efficiency of the department.

The labors of the past year, slight and imperfect though they may seem, have yet laid the foundations for the upbuilding of a successful department—a department that shall be worthy of the University, and an honor to the State.

Very respectfully yours,

WILLIAM R. LAZENBY.

*Ohio State University, November 14, 1882.*

## DEPARTMENT OF MILITARY SCIENCE AND TACTICS.

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*President Walter Quincy Scott :*

SIR: I have the honor to submit to you herewith the second annual report of the operation of the department of the Ohio State University under my charge.

Since the date of my first report the military organization of the students into a battalion of Infantry has been kept up. Toward the end of the school year, the number of students in the battalion decreased very much, by reason of many leaving school, and from other causes, but the interest in the drill of those who remained was well sustained throughout the year. At the beginning of the present term the accession of one hundred and fifteen newly admitted students to the ranks of those enrolled in the military department, brought the number of those in uniform and undergoing instruction to two hundred and eleven, of whom at this date two hundred and seven remain.

The military drills, beginning with the school of the soldier in the authorized United States (Upton's) Infantry Tactics, and extending through the school of the battalion, including parades, inspections, reviews and other military ceremonies, were carried on throughout the entire school year. When the state of the weather did not admit of out of door drill, the corridors and basement rooms of the University building were used for this purpose. In addition to the practical instruction already referred to, theoretical instruction in tactics and other military subjects was given to all those who desired to join the classes which were formed.

The work of the past year has been highly satisfactory and encouraging to me. Several causes have contributed to make it so, and have also given to the military organization an acknowledged standing among the departments of the University. Early in the year a change in the uniform of the officers of the battalion was suggested, and approved by the Faculty. To properly carry out this change, necessitated new equipments of service swords and belts. Means for procuring these were allowed by the Board of Trustees. The practical result of this generous action by the Board was soon manifest in the renewed activity and zeal with which these young gentlemen entered upon and continued to perform the duties of their respective positions. This was followed soon after by a tender, on the part of the President of the University, of his services to the battalion for a public lecture, which resulted in securing means for purchasing, at a cost of two hundred and sixty dollars, a national and a battalion flag, which could not have been obtained in any other way. The formal presentation of these colors to the battalion, by the Governor of the State, attended by the Adjutant General and other State officers and members of the State Legislature, gave fitting occasion and opportunity to these distinguished gentlemen to bring before and impress upon the students, who on that day stood before them in the ranks of the battalion, the object, importance and necessity of military drill as a part of their educational training, in a way which could not fail to be convincing.

While keeping a close supervision over the instruction and discipline of the battalion, and attending in person every formation and military exercise throughout the year, I have given encouragement and opportunity to the company officers to exercise practically the various functions of their positions whenever I considered them qualified for these duties. On Decoration day, in May last, when the battalion took part in the public exercises of the day, and marched in procession with parts of several of the best regiments of the Ohio National Guard, it was commanded in a very creditable manner by its senior Captain, M. N. Mix. The battalion organization is still one of four companies, with the following officers and non-commissioned officers, viz :

Captain—J. T. Anderson, Assistant to the Commandant and Acting Field Officer at battalion drills.

1st Lieutenant and Adjutant—W. L. Peters.

—————, Quartermaster (vacancy).

Sergeant—W. R. Pomerene, Sergeant-Major.

C. H. Hirst, Quartermaster-Sergeant.

Edward E. Sparks, Leader of the Band.

*Company A —*

1st Lieutenant—C. S. Amy, commanding.

1st Lieutenant—H. K. Terry.

2d Lieutenant—M. T. Dozer.

1st Sergeant—J. P. Milligan.

Sergeant—F. A. Taylor.

Sergeant—S. B. Beebe.

Corporal, ————— (vacancy).

Corporal, ————— (vacancy).

Corporal, ————— (vacancy).

*Company B —*

1st Lieutenant — W. S. Devol, commanding.

1st Lieutenant, ————— (vacancy).

2d Lieutenant—H. L. Stockwell.

1st Sergeant—W. H. McKinney.

Sergeant—Chas. P. Smith.

Sergeant—W. W. Keifer.

Corporal—F. W. Martin.

Corporal—Otto Schroll.

Corporal, ————— (vacancy).

*Company C —*

1st Lieutenant—N. W. Gilbert, commanding.

1st Lieutenant, ————— (vacancy).

2d Lieutenant—Geo. R. Twiss.

1st Sergeant—Theodore Tallmage.

Sergeant—W. H. Miller.

Sergeant—E. J. Converse.

Sergeant—James Haig.

Corporal—Frank Miller.

*Company D —*

1st Lieutenant—Wm. Neil, commanding.

1st Lieutenant—Winfield Scott.

2d Lieutenant, ————— (vacancy).

1st Sergeant—N. M. Wade.

Sergeant—Geo. A. Cunningham.

Sergeant—F. E. Hill.

Corporal—J. L. Gordon.

Corporal—M. Dick.

Corporal, ————— (vacancy).

Sergeant George A. Cunningham is the National, and Sergeant S. B. Beebe the Battalion color bearer.

Very respectfully,

GEORGE RUHLEN,

*1st Lieutenant 17th U. S. Infantry, Professor Military Science and Tactics.*

*Ohio State University, November 14, 1882.*



DEPARTMENT OF INDUSTRIAL ARTS.

*President Walter Quincy Scott:*

SIR: I respectfully present my Third Annual Report for the department of Industrial Art.

My classes in both Mechanical and Free-hand Drawing were much fuller the past year than the previous year, and I have had good reasons to feel greatly encouraged, both in regard to the increasing interest taken in the subject of drawing by the students, and the satisfactory progress made.

Following is a statement of the attendance in the classes during the year:

*First Term.*

Mechanical Drawing (Projection Drawing).....	30
Free-hand Drawing.....	45

*Second Term.*

Free-hand Drawing.....	50
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*Third Term.*

Free-hand Drawing.....	54
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179

Twice counted .....	30
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Total for the year.....	149
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The present year opens with an outlook quite as encouraging as the last. In the Projection Drawing class there are twenty young men from the departments of Civil, Mechanical, and Mining Engineering. The instruction given in this class prepares the young men for the study of Descriptive Geometry and the higher technical drawing, given in their respective courses. The lessons are given by class lectures, and the time devoted to the subject—two hours per day—is divided about equally between these lectures and the drawing of a progressive series of twenty-three plates. In the former the aim is to train the imagination of the students to apprehend clearly and quickly the exact appearance of any object by description—a very necessary faculty in the practical engineer—and in the latter, to train them to perfect accuracy and master-like execution in the drawing of the problems.

In the Free-hand department there are, this term, sixty-six young men and ladies, a larger number than has ever before been in the studio. I am encouraged to think that every year brings additional enthusiasm in this subject, and the progress made by individual students attests the genuineness of the interest of the members of the class. It has been my endeavor, as far as possible, to mould the course to suit the

tastes and desires of individual students, without, in any way, omitting what is of the most educational value. First of all, my students are trained to the correct perception of form, and the neat and careful delineation of it by accurately copying outline forms. I admit this is not the method of the French, to whom we usually look as guides in these matters, but inasmuch as our students, as a general thing, take drawing to enable them to record scientific observations and explorations, I am warmly in favor of a few weeks careful copying of difficult outline examples. After the student has learned to handle the pencil freely, pencil shading from flat copies is taught; and after that, shading from the actual objects with the leather or paper stump and powdered crayon or charcoal. The objects used in the order of their usage are wooden models of vases, etc., small and large casts, and life-size busts. At this stage students evince special desires or are advised to take up certain or all of the following branches: crayon drawing, from photographs from life, or from the Great Masters; water-color landscapes, or flower painting; oil painting, modeling in clay. For work in these branches the studio is supplied, to a limited extent, with copies and specimens of students' work of previous years. It is my endeavor to add to this equipment as much, from year to year, as are, in the judgment of the Board of Trustees, wise expenditures. I have been in art schools, and know how tiresome old copies become to the pupils, and into what mild ridicule and disuse they fall, even at the hands of new pupils.

Superior drawings are often willingly given to the department by the students, and these I intend to frame, using them as examples and guides to future students. Thus each year's class, by passing over the course and leaving behind evidences of its success, makes the success of following classes more certain, as *results* most plainly indicate *processes*.

I hope, before many terms, to have the department so equipped with copies, casts, and specimens of students' work, that many students will be attracted and not a few find their way through the door which may lead to a useful life in the field of art.

I am, sir, very respectfully, yours,

WILLIAM A. MASON,  
*Assistant Professor of Industrial Art.*

*Ohio State University, November 14, 1882.*

## DEPARTMENT OF FRENCH AND GERMAN.

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*President Walter Quincy Scott:*

SIR: I have the honor to submit the annual report of the French and German departments.

Last year I had, as I have now, four classes—two in French and two in German. In the fall term of last year these classes had an enrollment as follows:

Sophomore French.....	13
Freshman French .....	30
Second Preparatory German.....	21
First Preparatory German.....	38

This present term they number:

Sophomore French .....	14
Freshman French .....	52
Second Preparatory German .....	16
First Preparatory German.....	50

The course of study in each of these languages runs through two years; but during the second year, the French has but two recitations per week.

The Sophomore French was limited to its present time at the beginning of the fall term last year. The plan for the year's work having been made, this left no time to make, in either the Freshman or Sophomore year, any change with a view to compensate the latter for its limited time. Therefore, the Freshman Class pursued the usual course of study, while the Sophomore endeavored to make as complete a Sophomore course as possible. But this year, in order to make up, in a measure, for the short time in the second year, I have deemed it best to bring the language itself into immediate practice in the first year of the study. Not that I claim to make use of the so-called natural method system, for this can be applied well only where the course can run through, at least, four years. But we have taken up in the Freshman Class the grammar of the language in the language itself. I have been told by old language teachers that this was impossible with beginners, but with the consideration that it was not a Preparatory, but a Freshman Class, I have believed it possible, and have so found it, and therefore have every reason to hope for success.

It will be seen that the German classes are in the Preparatory course. This study receives in the classes those who come here to take a scientific course. Thus they get, early in their collegiate life, the help that a knowledge of German will give as a modern language, in which is recorded much of the valuable scientific research of the age. Also, they are benefited in having their minds trained by that

careful and systematic study, which must needs be given to a new language. This first result prepares them for the higher and more special purpose of the study, which is to extend their range of thought. This is obtained when they bring the language into use by thinking in it, and by studying the thought already produced in it. The first result comes from the study of the Grammar and construction of the language during the first year, while the second will come from the more advanced synthetical course of the last year.

Respectfully submitted,

ALICE K. WILLIAMS,

*Instructor French and German Languages.*

*Ohio State University, November 14, 1882.*



# **CIRCULAR AND CATALOGUE.**

# FACULTY.

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**REV. WALTER QUINCY SCOTT, D.D.,**  
President, and Professor of Philosophy and Political Economy.

**EDWARD ORTON, PH. D., LL.D.,**  
Professor of Geology.

**SIDNEY A. NORTON, PH. D., LL.D.,**  
Professor of General and Applied Chemistry.

**NORTON S. TOWNSHEND, M.D.,**  
Professor of Agriculture and Veterinary science.

**R. W. MCFARLAND, LL.D.,**  
Professor of Mathematics and Civil Engineering.

**ALBERT H. TUTTLE, M.Sc.,**  
Professor of Zoology and Comparative Anatomy.

**SOLON W. ROBINSON, C.E.,**  
Professor of Mechanical Engineering.

**THOMAS C. MENDENHALL, PH. D.,**  
Professor of Physics.

**NATHANIEL W. LORD, E. M.,**  
Professor of Mining and Metallurgy.

**JOHN T. SHORT, PH. D.,**  
Professor of History and the English Language and Literature.

**SAMUEL C. DERBY, A.M.,**  
Professor of the Latin and Greek Languages.

**WILLIAM R. LAZENBY, AG. B.,**  
Professor of Horticulture and Botany.

**GEORGE RUHLEN,**  
First Lieut. 17th Infantry, U. S. A., Professor of Military Science and Tactics, and Assistant  
Professor of Mathematics.

**FRANK H. ELDRIDGE,**  
Assistant Engineer U. S. N., Professor of Steam Engineering, and Assistant Professor of Physics.

**WILLIAM A. MASON, JR.,**  
Assistant Professor of Industrial Art.

**ALICE WILLIAMS,**  
Instructor in the French and German Languages.

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**SAMUEL C. DERBY, A.M.,**  
Librarian.

**MINNIE E. BIRD,**  
Assistant Librarian.

## ASSISTANTS.

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DAVID O'BRINE, B.Sc., M.E.,  
Assistant in Chemistry.

HORACE L. WILGUS, B.Sc.,  
Assistant in Physiology.

CHARLES C. MILLER,  
Assistant in Greek.

CLARENCE C. GREEN,  
Assistant in Zoölogy.

MINNIE O. SCOTT,  
Assistant in Latin.

WILLIAM H. MILLER,  
AUGUSTINE D. SELBY,  
Assistants in Physical Geography.



## ORGANIZATION AND EQUIPMENT.

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The Ohio State University is founded on the Congressional land grant of July, 1862. By that act a large amount of the public land was turned over to the several States, the proceeds of the sales to be devoted to the better education of the industrial classes. The share of each State was proportioned to its representation in the National Legislature, and thus six hundred and thirty thousand acres came into the possession of Ohio. This munificent gift was unfortunately pressed for sale upon a temporarily overstocked market, and the State realized only fifty-four cents to the acre. The total amount of the sales (\$342,450) was, however, put at interest, and when the institution was opened, in September, 1873, the principal and interest together constituted a productive fund of something over \$500,000, which has since been increased to a small extent, until an annual income of \$34,000 has been reached.

The Legislature having passed an act to authorize the several counties of the State to raise money to secure the location of the University, an offer of \$300,000 from Franklin county was accepted by the Board of Trustees, and the University was permanently located at Columbus. The money furnished by Franklin county has been mainly expended in the three following items: 1. The purchase of a valuable farm of three hundred and thirty acres, within the corporate limits of the city of Columbus. 2. The erection of a spacious and elegant college building, and two dormitories for students. 3. The equipment of the various departments of instruction in the University.

The total value of endowment and property at the present time exceeds \$1,000,000.

The departments already established, and the provisions made for giving instruction in them, are as follows:

### I. PHYSICS.

For this subject ample provision has been made in the equipment of the institution. It is safe to say that, in the opportunities afforded for thorough study in it, the University already surpasses most of the institutions of the country. Its laboratory is supplied with expensive and well-selected apparatus, designed not only for illustration, but also for original research in all the leading divisions of the science. Students are directed to its use in the way of original investigation as soon as they are properly prepared to undertake such work.

### II. CHEMISTRY.

The course in General Chemistry provides instruction in pure science, developing the theories and laws in order, and illustrating them by an extended suite of experiments. This course is supplemented by an important series of lectures on the applications of Chemistry to the Arts.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy.

The course in Quantitative Chemistry includes both the volumetric and the gravimetric methods. The student will also be assisted in any special branch of the science that he may desire, and take up in detail topics which relate to pharmacy, medicine, agriculture, and other sciences in which the principles of Chemistry are applied.

### III. ZOOLOGY AND COMPARATIVE ANATOMY.

The subjects of Zoology and Comparative Anatomy constitute a distinct professorship, and means have been provided for making the instruction in this subject thorough, practical, and extensive. A large amount of material, selected with special reference to its availability in teaching, has already been accumulated.

A dissecting-room, with good facilities for the study of veterinary anatomy, is also furnished, while for practical training in microscopy there have been supplied eight microscopic stands, representing all the principal modes of construction, and nineteen objectives, giving powers up to 2,500 diameters.

A Physiological Laboratory is now established, which is supplied with apparatus for the quantitative determination of several of the most important animal functions. It constitutes an important and timely addition to the means of instruction furnished by this department.

### IV. HORTICULTURE AND BOTANY.

These subjects, comprising the scientific and practical sides of the study of the vegetable kingdom, have recently been combined in a separate department, and extended and thorough instruction in them has already been begun.

### V. GEOLOGY.

The University is able to present unusual advantages for the study of Geology. By act of the Legislature it has been put in possession of all the collections made by the late State Geological survey, and these collections have been supplemented by valuable additions of fossils and minerals from various sources. The State collection embraces a very complete representation of every geological formation shown in Ohio.

### VI. AGRICULTURE.

The department of Agriculture, which also includes the *diseases of animals* and their *medical and surgical treatment*, is provided for in a distinct professorship, the aim of which is to acquaint the student with the theory and practice of a truly rational system in this most important field. The course extends through two years, and is rendered practical by being constantly connected with the work that is carried on upon the farm. Numerous opportunities are afforded to the students in veterinary medicine of observing the treatment of diseased animals.

## VII. MATHEMATICS.

Under the two professorships that divide the work of Mathematics between them, a full course of instruction is provided for, including also the subject of Astronomy. Two terms are given to Trigonometry, and one term is given to each of the three subjects, Analytical Geometry, the Differential, and the Integral Calculus. The work of several other departments, especially Civil Engineering, Physics, Mechanics, and Chemistry, require the constant and practical application of the knowledge acquired in mathematical study.

## VIII. DRAWING AND DESIGN.

Instruction in these subjects is provided in the University, and all needful facilities are furnished by which those who wish may acquire skill in these several departments of art. The studio is well supplied with casts and drawing copies. Mechanical drawing is made a prominent element in the education of all students in Engineering.

## IX. CIVIL ENGINEERING.

This course, which extends through three years, includes surveying, location and construction of roads and railroads, construction of bridges, strength of materials, geodesy, etc. The time of one professor is chiefly devoted to this department. The field-work is extensive and varied, and a full set of engineering instruments of the finest construction is provided.

## X. MINING ENGINEERING.

This department is now in successful operation, and classes are established in the several branches belonging to it. The mining of coal and the manufacture and working of iron are recognized as leading subjects in it, but full courses of instruction are offered in general Metallurgy. The department is well equipped, both for instruction and practical work.

## XI. MECHANICAL ENGINEERING.

The University is able to offer excellent advantages in this important subject. A Mechanical Laboratory has been established, and is in successful operation. The Russian system of hand-training has been introduced, which insures the imparting of a measure of practical skill, together with theoretical instruction.

## XII. MILITARY SCIENCE AND TACTICS.

In accordance with an act of Congress, an officer of the United States army has been detailed by the War Department to give instruction in the subjects named above. An extended course of lectures and recitations in Military Science is offered to such students as desire it, while thorough training in military drill is made obligatory upon all male students, except such as are excused on reasonable grounds.

## XIII. FRENCH AND GERMAN LANGUAGES.

In the organization of the University, special prominence is given to the modern languages. French and German can be pursued in courses as extensive as the needs of the student may require.

## XIV. LATIN AND GREEK LANGUAGES.

Ample provision is also made for the study of the Latin and Greek languages, not only in compliance with those terms of the organic law of the University which forbid the exclusion of classical studies, and which declare one of the aims of the institution thus endowed to be "the liberal education of the industrial classes," but also because of the great advantage which such study gives in acquiring a thorough knowledge of our own and other modern languages; and because of the important relations which the classic languages bear to literary, historical, and scientific studies.

## XV. PHILOSOPHY AND POLITICAL ECONOMY.

The course in Philosophy extends through the Junior and Senior years. The Junior Year is devoted to Psychology and the History of Philosophy; the Senior year to Ethics, Logic, Metaphysics, and Political Economy. All these subjects are taught by text-books. The students work up the topics by examining their own minds, by searching the best authors, and by weekly essays and discussions which are required from each student.

## XVI. HISTORY AND ENGLISH.

Extended courses in both subjects are provided. Three years of work in advanced History are afforded to candidates for the degree of Bachelor of Philosophy. The last of these, a course in United States Constitutional History and Civil Polity, is included in the course for the degrees of B.A. and B.Sc.

In English Language and Literature the course extends through the last three college years. In the Sophomore year, two terms are devoted to the Art of Discourse and one term to the Study of Words. In the Junior year, English, as a classic, is taken up. Beginning in the study of the Anglo-Saxon, it includes the critical reading of texts according to the methods employed with Latin and Greek, and a historical survey of the body of our literature.

The subjects are taught both by text-books and lectures, and the student is trained as far as possible to habits of independent research.

# DEGREES AND COURSES OF STUDY.

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The University offers three general degrees, viz.: Bachelor of Arts (A.B.), Bachelor of Philosophy (Ph.B.), and Bachelor of Science (B.Sc.). It also offers four special degrees, viz.: Civil Engineer (C.E.), Mining Engineer (M.E.), Mechanical Engineer (Mech.Eng.), and Bachelor of Agriculture (B.Ag.)

In addition to these degrees, certificates of work done in the several departments will be granted, as hereafter stated.

The courses of study which lead to the above-named degrees can be learned from the following statements and schedules.

A Preparatory Course of two years duration is provided for those students who enter the University directly from the common or district schools. This course includes the ordinary studies of the better grade of the high schools of the State. It is expected that the graduates of these schools can sustain examination in the entire Preparatory Course, and enter directly upon proper college work.

The Preparatory Course is shown in the following schedule:

## PREPARATORY COURSE.

### FIRST YEAR.

First Term—Algebra, from Quadratics; Physical Geography; Latin or German.

Second Term—Algebra completed; United States History; Latin or German.

Third Term—Botany; General History; Latin or German.

Exercises in English Grammar and composition one hour each week throughout the year.

### SECOND YEAR.

First Term—Geometry; Human Physiology; Latin or German.

Second Term—Geometry completed; Physics; Latin or German.

Third Term—Plane Trigonometry; Physics; Latin or German.

Exercises in Rhetoric and English Composition one hour each week throughout the year.

Either Latin or German, as named above, is to be chosen for a two years course. Students looking forward to the degree of Bachelor of Arts, or to the degree of Bachelor of Philosophy, will take Latin; candidates for other degrees will take German.

*Text-Books*—Algebra, *Loomis*; Geometry, *Loomis*; Trigonometry, *Loomis*; Physical Geography, *Guyot*; Human Physiology, *Huxley*; United States History, *Eliot*; General History, *Freeman*; Botany, *Wood*; Physics, *Norton*.

The text-books in Latin and German will be found under the heads of these departments on a subsequent page.

## GENERAL AND TECHNICAL COURSES.

In the following schedules the studies required for the several degrees of the University are named. The character and amount of the work done in each can be further learned from the detailed statements in regard to the departments that follow the schedules. It will be observed that a considerable amount of the work is common to the several courses, and, further, that this common work is made, for the most part, synchronistic in the courses.

## (A.) GENERAL COURSES.

FOR THE DEGREE OF BACHELOR OF ARTS.

*Freshman Year.*

First Term.	Latin, <i>Livy</i> .	Greek, <i>White's Lessons</i> .	Chemistry, <i>Norton</i> .
Second Term.	Latin, <i>Cicero</i> .	Greek, <i>Lessons, and Anabasis, Book I</i> .	Chemistry, <i>Norton</i> .
Third Term.	Latin, <i>Horace, Odes</i> .	Greek, <i>Anabasis, Books II and III</i> .	Chemistry, <i>Lectures, 2</i> . Mineralogy, <i>Dana, 3</i> .

Free-hand Drawing two hours each week throughout the year.

*Sophomore Year.*

First Term.	Latin, <i>Horace, Epistles, 3</i> . English, <i>Art of Discourse, Day, 2</i> .	Greek, <i>Memorabilia, and Phaedon, 3</i> . Physics, <i>Ganot, 3</i> .	Botany, <i>Lectures, 2</i> . Zoology, <i>Packard, 3</i> .
Second Term.	Latin, <i>Tacitus, Histories, 3</i> . English, <i>Art of Discourse, Day, 2</i> .	Greek, <i>Herodotus, Selections, 3</i> . Physics, <i>Ganot, 3</i> .	Botany, <i>Lectures, 2</i> . Zoology, <i>Packard, 3</i> .
Third Term.	Latin, <i>Plautus</i> . English, <i>Study of Words, Trench, 2</i> .	Greek, <i>Homer, 3</i> . Physics, <i>Ganot, 3</i> .	Botany, <i>Lectures, 2</i> . Zoology, <i>Packard, 3</i> .

*Junior Year.*

First Term.	Psychology, <i>Porter, 8</i> . Anglo-Saxon, <i>March's Gram. and Reader, 2</i> .	Greek, <i>Euripides, 3</i> . Latin, <i>Catullus and Lucretius, 2</i> .	Geology, <i>Le Conte</i> .
Second Term.	Psychology, <i>Porter, 3</i> . Chaucer, <i>March's Method, 2</i> .	Greek, <i>Sophocles, 8</i> . Latin, <i>Cicero, 2</i> .	Geology, <i>Le Conte, 3</i> . Astronomy, <i>2</i> .
Third Term.	History of Philosophy, <i>Schwegler, 3</i> . Shakespeare, <i>March's Method, 2</i> .	Greek, <i>Demosthenes, 3</i> . Latin, <i>Quintilian, 2</i> .	Geology, <i>2</i> . Astronomy, <i>Loomis, 3</i> .

*Senior Year.*

First Term.	Ethics, <i>Calderwood</i> .	Greek, <i>Plato, 3</i> . English Literature, <i>2</i> .	Constitutional History, <i>2</i> . Elective course in Science for the year.
Second Term.	Logic, <i>Jevons, 8</i> . Political Economy, <i>Wayland-Chapin, 2</i> .	Greek, <i>Sophocles, 3</i> . English Literature, <i>2</i> .	
Third Term.	Metaphysics, <i>8</i> . Political Economy, <i>Wayland-Chapin, 2</i> .	Greek, <i>Aeschylus, 8</i> . English Literature, <i>2</i> .	

FOR THE DEGREE OF BACHELOR OF PHILOSOPHY.

Freshman Year.

First Term.	Latin, <i>Livy.</i>	French, <i>Grammar, Duffet.</i>	Chemistry, <i>Norton.</i>
Second Term.	Latin, <i>Cicero.</i>	French, <i>Masson's Classics</i>	Chemistry, <i>Norton.</i>
Third Term.	Latin, <i>Horace, Odes.</i>	French, <i>Masson's Classics</i>	Chemistry, <i>Lectures, 2.</i> Mineralogy, <i>Dana, 3.</i>

Free-hand Drawing two hours each week throughout the year.

Sophomore Year.

First Term.	Latin, <i>Horace, Epistles, 3</i> English, <i>Art of Discourse, Day, 2.</i>	Physics, <i>Ganot, 3.</i> French, <i>Moliere, 2.</i>	Botany, <i>Lectures, 2.</i> Zoology, <i>Packard, 3.</i>
Second Term.	Latin, <i>Tacitus, 3.</i> English, <i>Art of Discourse, Day, 2.</i>	Physics, <i>Ganot, 3.</i> French, <i>Corneille, 2.</i>	Botany, <i>Lectures, 2.</i> Zoology, <i>Packard, 3.</i>
Third Term.	Latin, <i>Plautus, 3.</i> English, <i>Study of Words, Trench, 2.</i>	Physics, <i>Ganot, 3.</i> French, <i>Feuillet, 2.</i>	Botany, <i>Lectures, 2.</i> Zoology, <i>3.</i>

Junior Year.

First Term.	Psychology, <i>Porter, 3.</i> Anglo-Saxon, <i>March's Gram. and Reader, 2.</i>	History, <i>3.</i> Latin, <i>Lucretius, 2.</i>	Geology, <i>LeConte.</i>
Second Term.	Psychology, <i>Porter, 3.</i> Chaucer, <i>March's Method, 2.</i>	History, <i>3.</i> Latin, <i>Cicero, 2.</i>	Geology, <i>LeConte, 5.</i> Astronomy, <i>Loomis, 2.</i>
Third Term.	History of Philosophy, <i>Schwegler, 3.</i> Shakespeare, <i>March's Method, 2.</i>	History, <i>3.</i> Latin, <i>Quintilian, 2.</i>	Geology, <i>2.</i> Astronomy, <i>3.</i>

Senior Year.

First Term.	Ethics, <i>Calderwood.</i>	History, <i>2.</i> English Literature, <i>3.</i>	Constitutional History, <i>2.</i>  Elective course in Science for the year.
Second Term.	Logic, <i>Jevons.</i> Political Economy, <i>Wayland-Chapin.</i>	History, <i>2.</i> English Literature, <i>3.</i>	
Third Term.	Metaphysics. Political Economy, <i>Wayland-Chapin.</i>	History, <i>2.</i> English Literature, <i>3.</i>	

FOR THE DEGREE OF BACHELOR OF SCIENCE.

Freshman Year.

First Term.	Spherical and Analytical Trigonometry.	French, <i>Duffet</i> .	Chemistry, <i>Norton</i> .
Second Term.	Higher Algebra.	French, <i>Masson's Classics</i>	Chemistry, <i>Norton</i> .
Third Term.	Land Surveying. Use of Instruments.	French, <i>Masson's Classics</i>	Chemistry, <i>Lectures</i> , 2. Mineralogy, <i>Dana</i> , 3.

Free-hand Drawing two hours each week throughout the year.

Sophomore Year.

First Term.	{ Elective course in Botany, Chemistry, Physics, or Mathematics, for the year. English, for the year; First and Second Terms, <i>Art of Discourse</i> , <i>Day</i> , 2; Third Term, <i>Study of Words</i> , <i>Trench</i> , 2.	French, <i>Moliere</i> , 2. Physics, <i>Ganot</i> , 3.	Botany, <i>Lectures</i> , 2. Zoology, <i>Packard</i> , 3.
Second Term.		French, <i>Corneille</i> , 2. Physics, <i>Ganot</i> , 3.	Botany, <i>Lectures</i> , 2. Zoology, <i>Packard</i> , 3.
Third Term.		French, <i>Racine</i> , 2. Physics, <i>Ganot</i> , 3.	Botany, <i>Lectures</i> , 2. Zoology, <i>Packard</i> , 3.

Junior Year.

First Term.	{ Elective course in Botany, Chemistry, or Physics for the year.	{ Elective course from sciences already given, with addition of Anatomy and Physiology.	Geology, <i>Le Conte</i> .
Second Term.			Geology, <i>Le Conte</i> , 3. Astronomy, <i>Loomis</i> , 2.
Third Term.			Geology, 2. Astronomy, <i>Loomis</i> , 3.

Senior Year.

First Term.	{ Elective course from Science, or from Ethics, Logic, and Political Economy.	{ Elective course from list of sciences given above, with the addition of Geology.	Psychology, <i>Porter</i> , 3. Constitut'l History, 2.
Second Term.			Psychology, <i>Porter</i> , 3. Constitut'l History, 2.
Third Term.			History of Philosophy, <i>Schwegler</i> , 3. Constitut'l History, 2.



It will be observed that at the beginning of the Sophomore Year of the Bachelor of Science course an advanced course in science is to be selected from such branches as have been already studied in their elementary forms in either the Freshman Year or in the Preparatory Course. The choice at this time is therefore confined to the four following, viz.: Botany, Chemistry, Physics, and Mathematics.

At the beginning of the Junior Year the list of electives is extended by the addition of Vertebrate Anatomy and Physiology, and at the beginning of the Senior Year by the addition of Paleontology, and also of Philosophy and Ethics.

In the Senior Year of the courses for the degrees of Bachelor of Arts and Bachelor of Philosophy, there is also an election. The student can choose from any of the sciences, the elements of which have been previously given.

Rhetorical exercises are required of students in all the above-named courses throughout the Sophomore, Junior, and Senior Years.

#### (B). TECHNICAL COURSES.

The courses for the special degrees of Civil Engineer, Mining Engineer, and Mechanical Engineer, *agree with the course for the degree of BACHELOR OF SCIENCE for the Freshman Year.* They also have several studies in common with all the courses already named, as will be seen by the schedules. The course for the degree of Bachelor of Agriculture differs to a considerable extent from the courses previously described.

## FOR THE DEGREE OF CIVIL ENGINEER.

*Sophomore Year.*

First Term.	Surveying with Field Practice. Platting and Lettering.	French, <i>Moliere</i> , 2. Physics, <i>Ganot</i> , 3.	Analytical Geometry.
Second Term.	Descriptive Geometry, 3. Astronomy, 2.	French, <i>Corneille</i> , 2. Physics, <i>Ganot</i> , 3.	Differential Calculus.
Third Term.	Descriptive Geometry, 2. Astronomy, 3.	French, <i>Racine</i> , 2. Physics, <i>Ganot</i> , 3.	Integral Calculus.

*Junior Year.*

First Term.	Mahan's Civil Engineering.	Geology.	Analytical Mechanics.
Second Term.	Bridge Strains— Graphic Process.	Geology.	Maps, Shading, Tinting, etc.
Third Term.	Girder Bridges, Walls, Arches, etc.	Geology (Economic).	Drawing for Engineering Structures.

*Senior Year.*

First Term.	Railroad Field Work. Henck's Field Book.	Physics.	Strength of Materials. Hydraulics.
Second Term.	Drawing—Shadows and Perspective.	Physics.	Assaying.
Third Term.	Higher Geodesy.	Physics.	Plans, etc.

*Sophomore Year.*

First Term.	Physics, 3. Projection Drawing, 2.	Analytical Geometry.	Analytical Chemistry.
Second Term.	Physics, 3. Descriptive Geometry, 2.	Differential Calculus.	Analytical Chemistry.
Third Term.	Physics, 3. Projection Drawing, 2.	Integral Calculus.	Analytical Chemistry.

*Junior Year.*

First Term.	Geology.	Metallurgy.	Analytical Chemistry.
Second Term.	Geology.	Metallurgy.	Analytical Chemistry.
Third Term.	Geology (Economic).	Metallurgy.	Analytical Chemistry.

*Senior Year.*

First Term.	Assaying.	Analytical Mechanics.	Strength of Materials.
Second Term.	Mining Engineering.	Plans, Specifications, and Estimates for Metallurgical Works.	Blow-pipe Analysis.
Third Term.	Coal Washing and Mechanical Treatment of Ores	Plans, Specifications, etc.	Determinative Mineralogy.

FOR THE DEGREE OF MECHANICAL ENGINEER.

*Sophomore Year.*

First Term.	Analytical Geometry.	French, 2. Physics, <i>Ganot</i> , 3.	Mechanical Laboratory, 3. Projection Drawing, 2.
Second Term.	Differential Calculus.	French, 2 Physics, <i>Ganot</i> , 3.	Mechanical Laboratory, 3. Descriptive Geometry, 2.
Third Term.	Integral Calculus.	French, 2. Physics, <i>Ganot</i> , 3.	Mechanical Laboratory, 3. Projection Drawing, 2.

*Junior Year.*

First Term.	Geology.	Metallurgy.	Analytical Mechanics.
Second Term.	Geology, 3. Astronomy, 2.	Metallurgy.	Mechanism.
Third Term.	Geology, 2. Astronomy, 3.	Mechanical Laboratory. Designing.	Mechanism.

*Senior Year.*

First Term.	Thermo-Dynamics. Pneumatics.	Physics.	Strength of Materials. Hydraulics.
Second Term.	Prime Movers.	Physics.	Technical Drawing.
Third Term.	Mill-work.	Physics.	Machine Designing and Drawing.

## FOR THE DEGREE OF BACHELOR OF AGRICULTURE.

*Freshman Year.*

First Term.	Spherical and Analytical Trigonometry.	Mechanical Laboratory.	Chemistry.
Second Term.	Higher Algebra.	Mechanical Laboratory	Chemistry.
Third Term.	Land Surveying. Use of Instruments.	Mechanical Laboratory.	Chemistry, 2. Mineralogy, 3.

*Sophomore Year.*

First Term.	Economic Botany.	Zoology, 3. Cryp. Botany, 2.	Agricultural Chemistry.
Second Term.	Physiological Botany.	Zoology, 3. Cryp. Botany, 2.	Agricultural Chemistry.
Third Term.	Special Botany. Grasses, etc.	Zoology, 3. Cryp. Botany, 2.	Agricultural Chemistry.

*Junior Year.*

First Term.	Horticulture. (General Principles.) (Fruit Culture.)	Geology.	Anatomy and Physiology.
Second Term.	Horticulture. (Vegetable Gardening and Seed Growing.) (Arboriculture and Practical Forestry.)	Geology.	Anatomy and Physiology
Third Term.	Horticulture. (Landscape Garden'g.) (Pract'l Horticulture.)	Geology (Economic.)	Anatomy and Physiology.

*Senior Year.*

First Term.	Soils, Manures, etc.	Domestic Animals— Varieties, etc.	Diseases of Animals.
Second Term.	Farm Crops and Tillage.	Breeding and Feeding Stock.	Principles of Treatment.
Third Term.	Farm Improvement and Management.	Dairying. Wool Growing, etc.	Particular Diseases.

The range of instruction in the several subjects named in the preceding schedules is more particularly defined in the following statements of the work provided in the different departments of the University:

## DEPARTMENTS AND RANGE OF INSTRUCTION.

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### MATHEMATICS.

The preparatory department includes Algebra, Geometry, and Plane Trigonometry. In the Freshman Year the subjects of Spherical and Analytical Trigonometry, Higher Algebra, and Land Surveying are taken up.

In the Engineering courses, Analytical Geometry, Differential Calculus, and Integral Calculus are required in the Sophomore year. They are elective studies in the same year of the Bachelor of Science course.

### CIVIL ENGINEERING.

The order of studies in this department can be learned from the schedule which exhibits the course required for the degree of civil engineer.

*Text-Books.*—The works of Loomis on Algebra, Geometry, and Astronomy. In parts of the course, works by Davies, Warren, Church, Gillespie, Mahan, Haupt, Worthen, and others.

In addition to the use and study of the text-books, the students are taught and practiced in the use of various astronomical and engineering instruments—the level, the transit, the plane-table, the sextant, the globes. They have practical field-work throughout the year, except when the inclemency of the weather does not admit of it. The work consists in taking differences of level, running lines, measuring horizontal and vertical angles, determining the variation of the magnetic needle, finding the latitude of the pole star and by meridian altitudes of the sun; in fine, every variety of appropriate work which can be executed, is regularly, systematically, and thoroughly done.

### PHYSICS.

The instruction in Physics comprises three grades of work.

In the Preparatory Course, the elements or general principles of Physics are taught during the second and third terms. The work consists, in the main, of a daily

recitation, for which lectures by the instructor are occasionally substituted. This course is strictly elementary in its character, and is fully illustrated by experiments throughout.

During the Sophomore year all regular students, except candidates for the degree of Bachelor of Agriculture, have a recitation in Physics on three days of each week. In this course a text-book is used, and the work consists of recitations and lectures combined. Application is here made of the student's knowledge of mathematics to the more advanced portions of Physics. The formulae representing the more important physical laws are developed, and experiment is made use of whenever necessary to the elucidation of the subject.

In addition to the above, students in Civil or in Mechanical Engineering are required to give the equivalent of one daily recitation throughout one year to Higher Physics. Candidates for the degrees of Bachelor of Arts and Bachelor of Philosophy may elect the same for one year, and candidates for the degree of Bachelor of Science for one, two, or three years. The work in this course consists largely of laboratory practice. Lectures are given regularly to the whole class upon subjects of general interest, such as Making and Reducing Observations and their discussion, including the method of Least Squares. Text-books are used and lectures given upon special subjects of study. The attempt is made to make all students familiar with methods of original research, and as far as possible every student is required to do something in the way of original investigation. Before beginning this grade of work students should have completed the course in Pure Mathematics.

#### FIRST YEAR.

First Term—Graphics and Mathematics applied, four-fifths; Experiments, one-fifth.

Second Term—Physical Laboratory: Acoustics and Optics.

Third Term—Physical Laboratory: Heat.

#### SECOND YEAR.

First Term—Physical Laboratory: Heat.

Second Term—Physical Laboratory: Heat and Electricity.

Third Term—Physical Laboratory: Electricity and Magnetism.

In the five terms last named, the student uses the instruments of the laboratory in reviewing the work of others, or in original research. There are also combined with this, lectures on proper manipulation and care in keeping notes as conducive to trustworthy results; also, the theory of errors as regards instruments, reduction of observations, etc. The student is enabled to pursue his experiments thoroughly and extensively by means of the apparatus of the department, which includes many rare and valuable instruments.

*Works of Reference, accessible to the Student.*—Atkinson's Ganot's Physics, Deschanel's Physics, Kohlrausch's Physical Measurements, Pickering's Physical Manipulations, Stewart's Heat, Jamin's Physique, Clark and Sabine's Electrical Tables and Formulæ, Higg's Electric Lighting, Schwendler's Electric Testing.

**STATE METEOROLOGICAL BUREAU.**

The Legislature, at its last session, established a State Meteorological Bureau. The Professor of Physics is the Director of the Bureau. There is provided at the State University a full equipment of standard instruments for meteorological observations. Corresponding equipments are also provided for voluntary observers throughout the State—one in each Congressional District.

**MECHANICAL ENGINEERING.**

This course is intended for those who desire to prepare themselves either for the profession of Mechanical Engineering, for superintending the construction of machinery, or for managing machinery in manufacturing establishments. In it instruction in Principles is combined with practice. The former is mostly given by lectures, while the latter is confined to the Mechanical Laboratory.

The course includes the following special studies, all of which must be passed before taking the degree :

**MECHANISM AND DRAWING—ONE YEAR.**

Principles of Mechanism.  
Machine Designing and Drawing.  
Machine Drawing.

**PRIME MOVERS AND MACHINERY—ONE YEAR.**

Thermodynamics and Transmission of Fluids.  
Prime movers.  
Machinery and Mill-work.  
Besides the above there will be required, for graduating :  
Three terms of Elementary Laboratory Practice  
One term of Machine Construction in Laboratory.  
One term of Strength of Materials and Hydraulics.

**EXPLANATION OF THE COURSE.**

In the Principles of Mechanism are studied the parts of machinery by pairs ; or, elementary combinations of mechanism. In this the form and arrangement of the parts necessary for securing the desired modification of motion is sought.

In the Machine Designing the student takes up some problem in the shape of a particular machine for a special purpose. The forms, dimensions and arrangements of the parts are decided upon, and then a drawing is carefully made of the whole. Detail drawings to regulation size are then made, and finished in shade lines, as is done in the best shops. The quality of these drawings is sufficient for the requirements of photo-engraving for illustrations upon circulars.

In Thermodynamics are studied the principles which form the groundwork of all heat engines.



In Prime Movers are studied all kinds of heat engines, such as steam engines, hot-air engines, etc., and also wind-wheels and water-wheels.

Mill-work and machinery takes up valve-gears, fly-wheels, governors, efficiency of parts of machines, strength of parts, etc.

The Mechanical Laboratory is intended for acquainting the student with the materials used in machine construction ; with the forms customary in machinery ; to impart a degree of skill in the use of tools, and a knowledge of the operations and practices of shops. The student uses most of the ordinary tools of the machine-shop, such as the vise, hand-lathe, drilling-machine, engine lathe, milling and shaping-machine and planer ; also, the forge and anvil, the iron cupola and brass furnace and pattern-makers' tools.

The first terms' work consists of the actual use of tools in executing a set of forms chosen, with a view to supplying the greatest possible amount of practical instruction for the time. This is combined with weekly lectures on tools and their use.

The second term carries the above practice to the fitting together of parts. This is combined with weekly exercises in designing and drawing of machine elements, such as cranks, bearing-boxes, stub-ends, etc.

The third term is fully occupied in fitting parts carefully together, as in the joints of machinery, and in finishing the surfaces by scraping, polishing, burnishing, etc. This is in combination with a weekly exercise in the invention of simple machines for specific operations, such as bending wire staples, cutting wooden combs, etc.

The fourth term of Mechanical Laboratory practice is constructive. It is taken in connection with the principles of mechanism. In the latter, problems in mechanism are worked out, forms and dimensions assigned to the parts, and then these are executed in the Laboratory, resulting in models of mechanical movements for the cabinet.

Projects will be assigned to the student, from time to time, on topics connected with his studies, requiring him to take indicator cards, test the efficiency of boilers, visiting manufacturing establishments, etc., and report. Such reports are neatly made out on the regulation papers of the Department. These are taken, in part, for the examinations, and retained for the cabinet.

*Text-Books and Works of Reference.*—Rankine's Steam Engine, and Machinery and Mill-work ; Weisbach's Mechanics ; Willis's Principles of Mechanism ; Belanger's Cinematique ; Zenner's Traite de la Chaleur ; Neville's Hydraulics ; Clausius and McCulloch on Heat ; Sellers's Manual of Machine Tools ; Shelley's Workshop ; Unwin's Elements of Machine Design ; Nicholson on Files and Filing.

## DRAWING AND DESIGN.

In Mechanical Drawing instruction is given in Elementary Projection Drawing, and to any special student who may desire it, advanced Mechanical Drawing, such as Architectural or other Constructive Drawing.

In Free-Hand Drawing, instruction is given in Elementary Drawing, Outline Drawing from the flat copy and from models, and in Shading from models and casts Water-colors Painting from copies, and groups of objects, Oil Painting from the copy

and groups in still-life, Crayon Portraits from copy or photograph, and Modeling in clay, are also taught.

### CHEMISTRY.\*

All students who wish to obtain a degree are required to study Chemistry for two and two-fifths terms. During this time General Chemistry, together with its most important applications to the arts, is taught by the use of text-books and of lectures, illustrated, by an ever-growing collection of the materials used in manufactures, and by a very complete suite of experiments.

After the completion of this elementary course, those who desire to devote special attention to Chemistry enter the analytical laboratory, where they can carry on their work for two years or more. This laboratory work is *required* only of students in Mining. Any other student may enter the laboratory if his time and his strength permit.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy. He is also employed in making various compounds, and, if his time permit, studies exhaustively one or more of the elements and the important compounds thereof.

The course of Quantitative Chemistry includes both the gravimetric and volumetric methods. The analyses are at first confined to those compounds whose structure is known, and afterwards extended to such bodies as the student may require in the special branch of the science to which he desires to devote himself. Opportunity is offered for the study of coals, ores, minerals, fertilizers, soils, or of the useful and the waste products in manufactures.

If the student desire, he will also be assisted in taking up in detail topics which relate to Agriculture, to Pharmacy, to Medicine, and to other sciences, or to arts in which the principles of chemistry are applied. A full course of assaying is given in the Mining Laboratory, which is also open to students of chemistry.

A summary of the course is given below.

### REQUIRED OF ALL CANDIDATES FOR GRADUATION.

#### GENERAL CHEMISTRY—TWO AND TWO-FIFTHS TERMS.

Inorganic and Organic Chemistry, and the applications of Chemistry to the Arts.

### SPECIAL COURSE.

#### FIRST YEAR.

First Term—Qualitative Analysis: Exercises in Blow-pipe and Flame Reactions, Reactions in the dry way, Reactions of Single Bases and Acids.

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\*For description of new laboratories of departments of Chemistry and Mining and Metallurgy, see President's report.

Second Term—Qualitative Analysis continued: Determination of Mixtures, Blow-pipe Mineralogy, Preparation of Compounds.

Third Term—Quantitative Analysis, Stoichiometry, Review of General Chemistry throughout the year.

#### SECOND YEAR.

Quantitative Analysis: Special studies in Chemistry applied to Pharmacy, to Agriculture, to Manufactures, and to the Arts.

*Text-Books.*—Norton's Chemistry, Fowne's Chemistry, Beilstein's Manual, Galloway's Qualitative Chemistry, Will's Analytical Chemistry, Classen's Quantitative Chemistry, Fresenius's Quantitative Chemistry, Caldwell's Agricultural Chemistry.

*Books of Reference.*—Watt's Dictionary of Chemistry, Handwörterbuch der Chemie, Gmelin's Hand-Book of Chemistry, Wagner's Chemical Technology, Graham-Otto's Chemie, Rose's Analytischen Chemie, Hoppe-Seyler and Gorup-Besanez's Physiologischen Chemie, Elderhorst's Determinative Mineralogy.

#### MINING AND METALLURGY.

The course in Mining Engineering secures to the student careful instruction, with ample allowance of time, in the three fundamental branches of the art—mining, preparation of the ore, and its metallurgical treatment. These courses will comprise lectures, the study of text-books, preparation of maps, drawings, and sections, and visits to existing works, with careful reports upon them, and practice in estimates and designs.

For Assaying, there is a full equipment of furnaces and ores for the dry assay, and the wet methods are taught in the chemical laboratory.

An ample collection of minerals is provided, comprising all species with which the Mining Engineer should be familiar, and to this the students have constant and familiar access.

Crystallography is taught by the aid of a complete collection of large wood models, made especially for the department, and containing every common form.

*Text-Books and Books of Reference.*—Dana's Mineralogy, Egleston's Crystallographic Tables, Callon's Mining, Andre's Mining and Mining Machinery, Phillips's Metallurgy, Egleston's Metallurgical Tables, Rittenger's Aufbereitung, Gætschmann's Aufbereitung, Bodemann & Kerl's Assaying, Mitchell's Assaying, Von Cotta's Ore Deposits.

#### GEOLOGY AND PALEONTOLOGY.

In the preparatory course one term is given to Physical Geography. In all of the college courses General Geology is required in the first two terms of the Junior year, and Economic Geology in the third term.

Le Conte's *Elements of Geology* is made the basis of the instruction in the general course; Economic Geology is taught by lectures.

Students desiring to pursue Geology further can elect it as one of their studies throughout the Senior year. In this year, particular attention will be given to the Geology and Paleontology of Ohio, for the illustration of which subjects the museum

affords ample materials. These subjects will be taught by lectures, by practical work in the museum, and as far as possible by field practice.

*Text-Books and Works of Reference.*—Le Conte's Elements of Geology, Dana's Manual of Geology, Lyell's Principles of Geology, Nicholson's Manual of Paleontology, Geological Reports of Ohio and of other States.

## AGRICULTURE AND VETERINARY SCIENCE.

There are three years of work provided for the student in the department of Agriculture. In the first year, Soils are made a subject of examination, their geological relations and origin are explained, their composition is shown, and how it is determined; the special adaptations of soils to particular crops and modes of culture are shown, and how to increase or restore exhausted fertility; the management of pastures and meadows; the character and value of the different grasses, clovers and other forage plants; the culture of field crops, such as corn, wheat, oats, barley, rye, potatoes, etc.; also the value and application of animal manures, marl, gypsum, wood-ashes, lime, superphosphate, guano, and city sewage.

The work named above occupies the first and second terms. During the remainder of the year the following subjects are treated: Work of the farm, and improvements; Drainage, draining tools, and the manufacture of drain-tiles; Irrigation, its value and methods; Farm Roads, and how to make them; Fences, material, construction, and cost; Rural Architecture, applied to the erection of farm-houses, barns, stables, etc.; Farm Machinery.

The second year is mainly spent on the following topics: The natural history, description and adaptation of the various domestic animals—horse-training, cattle feeding, dairy management, wool-growing, etc.

The work of the third year is spent on the general subject of Veterinary Science. The range of instruction can be learned from the topics named below: General principles, Causes, Symptoms, Elements of Disease; Classification of Diseases, Principles of Treatment, and Remedial Agents; Particular Diseases and Operations. These are carefully studied, and, so far as opportunity can be obtained, diseases are treated, and operations made, under the inspection of the class.

## DEPARTMENT OF HORTICULTURE AND BOTANY.

The instruction in Botany begins with the first year of the Preparatory Course, one term of which is devoted to Structural and Systematic Botany. Further instruction is given in each of the following subjects: Economic Botany, Vegetable Physiology, Vegetable Histology, Gramineæ, Compositæ, and other special groups, Ferns and Fungi. Their arrangement, as regards the collegiate terms and years, is seen in the tabulated statement of the different courses of study.

The instruction is given by lectures in connection with Laboratory practice, supplemented by field-work or class excursions.

The practical bearings of the Science are made prominent in all the instruction given. In Fungi, special study is made of those forms producing rust, mildew, blight, etc., which prove so destructive to cultivated plants.

In Economic Botany, besides a study of the special characteristics, geographical distribution, and distinctive properties of all the prominent natural orders, the history, uses, and importance of the different economic species, included in their orders, are fully considered.

The study of Horticulture comprises lectures and recitations in the class-room, supplemented by observations and practice in the gardens and orchards. It is treated as an art based on science. The instruction continues throughout the year. The first term is devoted to a study of the General Principles of Horticulture and Fruit culture. Under the first general subject the following are among the topics considered: Horticulture, as a profession, its relation to science; location for Horticultural work; implements, fertilizers, draining and irrigation, weeds and insects, management of help, marketing, etc.

The course in Fruit Culture embraces a study of the origin, history, methods of propagation, pruning and training, harvesting and marketing, insect enemies, diseases and varieties of both the small and large fruits.

In Arboriculture and Forestry, special attention is given to the influence of forests upon climate, the value of trees for timber and ornament, the best methods of culture, and a history of different varieties.

The instruction in Vegetable Culture includes kitchen and market gardening and seed-growing. Among the subjects considered are: location of the garden, laying out ground, draining, special preparation of soil, irrigation, management of composts, commercial fertilizers, implements, selection of seed, construction and management of green-houses, hot-beds, cold-frames; special garden crops, history, cultivation and varieties of each; growing seeds for home use and for market, the family kitchen garden, etc. In connection with the lectures, experiments, such as testing the vitality and germinating power of different seeds, are conducted in the Laboratory.

The third term is devoted to Practical Floriculture and Landscape Gardening. The general subject is divided into the following topics: window-gardening, general management of house-plants, hanging-baskets, climbing vines, flowering bulbs, ferneries, Wardian cases, etc.; out-door flower-gardening, commercial flower-gardening, lawns, walks and drives, ornamental shrubs and trees. Flower-beds in the borders, and a considerable collection of ornamental shrubs and trees on the college grounds afford valuable means of illustration in the study of the above subjects.

#### AGRICULTURAL EXPERIMENT STATION.

The State has established an Agricultural Experiment Station, which is now located at the University. The Station is sustained by appropriations from the State.

The experiments and investigations will be carried on both in the field and in the laboratory, and will deal with the following great Agricultural interests, viz.: (1). Grain Raising. (2). Stock Farming and Dairy Husbandry. (3). Fruit and Vegetable Culture. (4). Forestry.

The Station is prepared to test varieties; to analyze and test fertilizers and manures; to examine seeds that are suspected of being unsound or adulterated; to identify and name weeds and other plants; to investigate, and describe when known,

the habits of injurious and beneficial insects; and other work of a similar character that properly comes within its province.

The Professor of Horticulture and Botany is the Director of the Agricultural Experiment Station.

### ZOÖLOGY AND COMPARATIVE ANATOMY.

The work of this department comprises the study of animal life, alike from the anatomical and the physiological aspect. Preparatory students receive, during the first term of their second year, instruction in this department in the elements of human anatomy and physiology. It is the object of this instruction to impart to these students such general knowledge of the structure and functions of their own bodies as will serve as a guide to their maintenance in a state of health and usefulness. Huxley's *Lessons in Elementary Physiology* is used as a text-book, accompanied by lectures and by anatomical and histological demonstrations.

All students who are candidates for bachelors' degrees receive instruction in Zoölogy during their Sophomore Year in this department. This instruction will be by lectures, with collateral reading, demonstrations, and such laboratory exercises as the size of the classes from year to year will permit, and will have for its object to impart to the student a clear conception of the animal kingdom as a whole rather than a mere technical familiarity with one of its lesser divisions, to illustrate the objects and methods of classification, to indicate the more important of those morphological relations on which all intelligent classification is based, and to give some insight into those principles which underlie all the phenomena of animal life. All the classes of the animal kingdom (as well as the orders of the more important classes) will receive consideration, but the larger proportion of the student's attention will be directed to the classes and order of the Invertebrata, partly because they include those forms least likely otherwise to come under their observation, and partly because of the larger amount of work done upon the Vertebrata in the advanced work of the department.

At the beginning of the Junior Year students who are candidates for the degree of Bachelor of Science have open to their election the advanced work of this department. The first year of this work is devoted mainly to the study of Physiology, with its necessary accompaniments of Histology and Physiological Anatomy, in the following manner:

The student begins the consideration of any function, or group of functions, by a careful dissection of the organs involved in one or more of the domestic animals. The dissecting-room is convenient and well-lighted, and is well supplied with the necessary material and appliances. While the human body is never dissected here, students looking to the medical profession can here acquire a knowledge of practical anatomy and an amount of experience that will prove of great service in the future.

The Histology of the parts involved follows, then anatomy. The student is here not only furnished with suitable preparations for study, but also taught to harden material, to cut, stain, and mount sections for himself, and to perform all the histological manipulations. The laboratory is supplied with microscopes, microtomes, etc., and with all necessary reagents, and offers special facilities in this direction.

The form, structure, and relations of the organs involved having been duly ex-



amined, the student now proceeds to the dissection of the function in question. The Physiological Laboratory is provided with facilities for practical work in chemical physiology, such work being supplemented by reading and lectures. Provision having not yet been made for the practical study of the physics and mechanics of the body, instruction is given in these cases by reading and lectures only.

It is, of course, not practicable to discuss in this manner all the functions of the animal body in a single year. Such a selection will be made each year as will best illustrate the methods and progress of physiological research, and will, all things considered, be most profitable for the students then in the laboratory.

This year's work is open to all students (other than those indicated), who have completed the required Physics, Chemistry, Physiology and Zoology of the preparatory and college classes. It is required of Juniors in Agriculture.

The second year's work, open to all who have completed the work of the first year, deals with the phenomena of animal life from the morphological rather than the physiological side. The organization, classification and distribution of animals, the principles of comparative anatomy, the phenomena of embryology and their significance will here receive attention.

While the work of this year will be arranged largely with reference to the requirements and aptitudes of each student, the following general plan will be followed: Each student will be required to study as thoroughly as the time and the facilities afforded by the department will permit, the Zoology of one of the lower divisions of the Invertebrata, the morphology of one or more classes from one of the higher divisions, and the comparative anatomy of at least one group of organs in the Vertebrata.

In addition to numerous works of reference accessible to students, the following hand-books are required to be provided: for the first year's work, Mivart's *Lessons in Anatomy*, Prudden's *Practical Histology*, and Sanderson's *Syllabus of Lectures on Physiology* (2d edition); Frey's *Compendium of Histology*, and Foster's *Text-book of Physiology* are recommended in addition; for the second year's work, Gegenbaur's *Comparative Anatomy*, and Huxley's *Anatomy of Invertebrates*.

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## HISTORY AND ENGLISH.

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### HISTORY.

Elementary instruction in United States and General History is afforded in the preparatory course. Three courses of Advanced History are provided for students seeking the degree of Bachelor of Philosophy. The third of these, a course in United States Constitutional History, is also required of candidates for the degrees of B.A. and B.Sc.

The arrangement of the work is as follows:

## PREPARATORY COURSE.

*First Year.*

Second Term—United States History (Eliot).

Third Term—General History (Freeman).

## COLLEGE COURSE.

*Junior Year of Course for the Degree of Ph.B.*

The Middle Ages; text-book, Hallam. Lectures. Three hours per week for a half year.

Modern History to 1815 as seen in the Conflict of Liberty and Absolutism; text-book and lectures. Three hours per week for a half year.

*Senior Year of the same Course.*

History of the English Constitution; text-book and lectures. Two hours per week for a half year.

The History of the XIX Century and present condition of the Great Powers; text-book and lectures. Two hours per week for a half year.

*Senior Year of the Course for the Degrees of B.A., Ph.B., and B.Sc.*

United States Constitutional History and Civil Polity; by lectures and theses. Two hours per week throughout the year.

*Text-books and works of reference.*—The histories by Hallum, Sheppard, Sismondi, Gibbon, Martin, Von Sybel, Thiers, Alison, Motley, Dunham, Von Raumer, Von Ranke, Gervinus, Savigny, Bryce, Green, Freeman, Hume, Macauley, Turner, Stubbs, May, Seeley, Arndt, Adams, Mackenzie, Freeman's Historical Geography of Europe, etc., etc.

*Works of reference in Constitutional History of the United States.*—Curtis's History of the Constitution; Von Holst's Constitutional History of the United States; Frothingham's Rise of the Republic; the Federalist; the works of Adams, Hamilton, Jefferson, Madison, Webster, Elliott's Debates, Benton's Thirty Years' View, the Annals of Congress, Benton's Abridgement of the Debates of Congress, etc.

## ENGLISH.

The work in English runs through three years in the courses for B.A. and B.Ph. The following progressive course is provided:

*Sophomore Year.*

First Term—Art of Discourse, *Day*.

Second Term—Art of Discourse, *Day*.

Third Term—Study of Words, *Trench*.

This English of the Sophomore year is likewise required in the course for the degree of Bachelor of Science.



*Junior Year.*

First Term—Anglo-Saxon (March's Grammar and Reader).

Second Term—Chaucer (Clarendon Press edition of Prologue, Knight's Tale, etc).

Third Term—Shakespeare (Julius Cæsar, and Macbeth).

*Senior Year.*

First Term—Hale's Longer English Poems.

Second Term—A History of English Literature.

Third Term—A History of English Literature (including American authors).

The class-room work in English occupies two hours per week in each of the years named. Lectures, historical and critical, on language and literature run parallel to the course prescribed.

*Books for Reference.*—Maetzner's Englische Grammatik; Earl's Philology of the English Tongue; Marsh's Lectures on Origin and History of the English Language; Marsh's Lectures on the English Language and Literature; Taine's and Craik's Histories of English Literature; Morris's English Accidence; Grein's Angelsächsische Bibliothek, etc., etc.

## GERMAN AND FRENCH.

A two years course in each of the two languages is provided for. In the beginning of either course the student attends mainly to grammatical doctrine and literal versions, and afterward to the literary contents and characteristics of what he reads. Lectures upon the respective literatures run through the second year of the course.

## GERMAN.

*First Year.*

First and Second Terms—Cook's Otto's German Grammar.

Third Term—Schiller's Der Neffe als Onkel—Composition.

*Second Year.*

First Term—Schiller's Maria Stuart; Composition.

Second Term—Lessing's Nathan der Weise; Literature.

Third Term—Goethe's Iphigenie; Literature.

## FRENCH.

*First Year.*

First Term—Duffet: French Grammar and Exercises.

Second Term—Grammar continued; Masson's French Classics, vol. 5.

Third Term—French Classics continued.

*Second Year.*

First Term—Moliere: Le Misanthrope.

Second Term—Corneille: Cinna; Literature.

Third Term—Racine: Athalie; Composition.

## LATIN.

The course of study in Latin extends through five years, and is arranged as follows:

## PREPARATORY LATIN.

*First Year.*

First Term—Latin Lessons; Allen and Greenough's Latin Grammar.

Second Term—Lessons; Caesar, *De Bello Gallico*.

Third Term—Caesar continued; Roman Antiquities.

*Second Year.*

First Term—Cicero, *In Catilinam*.

Second Term—Cicero continued; Virgil's *Aeneid* begun.

Third Term—Virgil continued.

## COLLEGE COURSE.

*Freshman Year.*

First Term—Livy, Books I and XXII; Roman History.

Second Term—Cicero, *Epistolae*; Roman History.

Third Term—Horace, *Odes*; Latin Prose Composition.

*Sophomore Year.*

First Term—Horace, *Epistles*; Latin Etymology.

Second Term—Tacitus, *Histories*; Roman History.

Third Term—Plautus, *Trimunus*; Roman Antiquities.

*Junior Year.*

First Term—Catullus and Lucretius, Selections; Latin Literature.

Second Term—Cicero, *Tusculan Disputations*; Roman Law.

Third Term—Quintilian, Book X; Latin Literature.

During the college course instruction will be given by text-books, or lectures, in Roman Antiquities and History, in the Latin Language and Literature, and in Roman Law.

The requirements in Latin for admission to college embrace Latin Grammar and Composition, three books of Caesar, five orations of Cicero, and five books of Virgil.

## GREEK.

The course of Greek comprises four years of college work, arranged as follows:

*Freshman Year.*

First Term—Goodwin's Grammar, and White's Lessons.

Second Term—Grammar and Lessons; Xenophon, *Anabasis*, Book I.

Third Term—*Anabasis*, Books I and II. Greek History.

*Sophomore Year.*

First Term—Xenophon *Memorabilia*; Greek History.

Second Term—Herodotus, Selections; Greek Antiquities.

Third Term—Homer, *Odyssey*; Greek Literature.

*Junior Year.*

First Term—Thucydides; Greek Prose Composition.

Second Term—Euripides, *Medea*; Greek Literature.

Third Term—Demosthenes, *Olynthiacs*; Greek History.

*Senior Year.*

First Term—Plato; Greek Etymology.

Second Term—Sophocles, *Oedipus Tyrannus*; Lyric Poets.

Third Term—Aeschylus, *Prometheus*.

## PHILOSOPHY AND POLITICAL ECONOMY.

The course in Philosophy extends through the Junior and Senior years. The Junior Year is devoted to Psychology and the History of Philosophy; the Senior year to Ethics, Logic, Metaphysics, and Political Economy. All these subjects are taught by text-books. The students work up the topics by examining their own minds, by searching the best authors, and by weekly essays and discussions which are required from each student.

## PROVISIONS FOR SPECIAL STUDENTS.

To students entering the University for the purpose of taking some special study, and who do not propose to complete a regular course, *full freedom in the selection of the branches which they will pursue is granted, subject only to the necessary limitation that they are prepared to take up with advantage the studies which they select.* They will enter the classes organized for the regular courses, and they can not be allowed to impair the quality of work done in the classes through their own inadequate preparation. Advanced students will find every facility for special work. The preliminary examinations are required of special students.

## PROVISION FOR INSTRUCTION IN AGRICULTURE.

The University recognizes its obligations, imposed in the terms of the grant on which it is founded, to the great industrial interest of agriculture. This obligation it aims to meet in various ways. It fixes its standard of admission so that students may enter its classes from the common schools. It provides for thorough instruction in the branches of science on which Agriculture depends. It has established a professorship of theoretical and applied Agriculture. It has established a professorship of Horticulture and Botany. It has laid down a special course leading to the degree of Bachelor of Agriculture. It has instituted courses of lectures in the sciences relating

to Agriculture and in theoretical Agriculture, to which the farmers of the State are invited without charge.

While it is believed that the varied and complex questions with which the farmer has to deal, justify and require, for their most successful treatment, the extended and thorough courses of study necessary for the degree of Bachelor of Agriculture, it is still recognized that comparatively few will return from a six years course of study to the farm again, and, therefore, all possible advantages are offered to young men from the country who enter the institution for a shorter time. The work of the department of Agriculture is shaped so as to give to this class as large a measure of service as possible for whatever time they are on college ground.

### LITERARY SOCIETIES.

There are two Literary Societies in the University, the *Alcyone* and the *Horton*. Both are provided with rooms in the University building, the equipment of the Alcyone hall having been mainly furnished through the generosity of the late John G. Deshler, of Columbus. The societies are vigorous and effective, and furnish to the student a very desirable training in public speaking and parliamentary order.

# A D M I S S I O N.

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## I. TO THE PREPARATORY DEPARTMENT.

For admission to the Preparatory Department of the University, students must pass a satisfactory examination in the branches taught in the common schools, viz.: Reading, Orthography, Writing, Grammar, Geography, Arithmetic, and Algebra through simple equations.

The attention of those proposing to enter the University is especially directed to the terms above given. A competent knowledge of the common school branches is required. The University does not undertake to do the work which the common schools are able and willing to do, viz.: that of grounding the student in the elements of an English education. He must bring with him a fair measure of the training which these schools are prepared to give. If it be asked what is a competent knowledge of these branches, it may be answered that the candidate should certainly have knowledge enough of them to entitle him to a teacher's certificate from a county board of examiners.

Graduates of the high schools of the State are admitted to the Preparatory Department without examination. Applicants having a teacher's certificate of twelve months, are also admitted without examination, except in Algebra, where this study is not included in the certificate.

## II. TO THE COLLEGE CLASSES.

For admission to the Freshman Class of any course, the student must sustain examination in the studies of the Preparatory Department, that lead to this course. The Preparatory Department, as now constituted, agrees very well with the course of instruction in the better grade of high schools of the State. The full requisitions, then, for admission to college standing, are as follows:

English Grammar,  
Common School Geography,  
Physical Geography,  
Arithmetic,  
Algebra,  
Geometry,  
Plane Trigonometry,

Botany,  
Physics,  
Human Physiology,  
United States History,  
General History,  
Latin or German, to the amount of  
a two years course.

Graduates of high schools of this State, in cities having a population of 5000 or more, by the census of 1870, and of such other high schools and academies of the State as give satisfactory evidence to the faculty of the efficiency of their courses of study, will, on presenting their diplomas, be admitted to the Freshman Class, in any course of study for which their previous high school work shall have fitted them.

Students who do not design to complete a regular course of instruction, are allowed to select such studies as they are prepared to carry on with profit to themselves and without detriment to the regular classes.

Students are admitted to advanced standing in any of the courses, on their sustaining examination in the work required in the University for such standing.

Students entering from other colleges are required to bring certificates of honorable dismissal.

The University is open to students of both sexes, but there are no buildings provided for the residence of young ladies on the College grounds. Boarding-places, in respectable families, are secured for such young ladies as enter the institution, but the faculty is not so situated that it can exercise supervision over their conduct outside of College hours. Parents, who place their daughters in the University, should be well satisfied as to their discretion, or else should leave them under the care and control of the family with which they board.

### EXPENSES.

1. *College Dues.*—A charge of \$5.00 a term, or \$15.00 a year, is made against all students, under the head of incidental expenses. *There is no charge for tuition in any department of the University*; but advanced students in Chemistry and Physics are required to pay fees to cover, in part, the cost of materials consumed, and the deterioration of the expensive instruments employed. The fee in the Chemical Laboratory is \$10.00 per term, and in the Physical Laboratory \$7.00 per term. These dues are required at the opening of each term.

2. *Board.*—There are two dormitories on the College grounds, provided for the use of students. The smaller of these provides unfurnished rooms, *rent free*, to such students as desire to board themselves, and thus to reduce their expenses to a minimum. Twenty students can be accommodated in the building, two students being assigned to each room. The expense of living in this way falls below \$2.00 per week.

The larger dormitory can accommodate seventy students. It is, for the present, turned over to the University club, *rent free*. Board, fur-

nished room, fuel, light, and washing are, at present prices, supplied for less than \$3.50 per week. New students will not, however, be admitted to the club without special recommendation.

Boarding-clubs are, also, frequently organized in the neighborhood of the college, by students, in which expenses are kept at \$3.50 per week, at present prices.

Board, with furnished rooms, can be obtained in private families within convenient distances of the college, at rates varying from \$3.50 to \$5.00 per week. The ruling rate may be taken as \$4.00 per week for young men, and \$4.50 for young ladies.

Free access to the college is secured by two lines of street railroads, which connect it with the central portions of the city.

There is a large amount of work on the college farm that can be performed to advantage by students, and for which they are paid at the current rates for such labor. A number of students defray all their college expenses by such labor. In the assigning of work, preference is given to students in the department of agriculture, and to those who are ready to devote a certain number of hours each day to the tasks required. *The University does not guarantee work to all applicants.*

A college uniform has been adopted, with which all members of the military organization are required to provide themselves. The cost of the uniform is about \$23.00.

#### SUMMARY.

The expenses of a college year of thirty-eight weeks, will include the following items, viz.:

College dues .....	\$15 00	\$15 00
Board, rooms, etc., at \$3.00 per week.....	114 00	at \$4 50 171 00
Total .....	\$129 00	\$186 00

This estimate provides for light, fuel and washing, but does not include text-books nor charges for laboratory supplies. Students boarding themselves can reduce the lowest of these estimates at least \$30—making a total of \$100.

#### RULES AND REGULATIONS.

The following rules and regulations, among others, are now in force in the University :

#### STANDING.

1. The standing of students shall be reported at the end of each term as "passed with merit," "passed," "conditioned," or "failed";

such standing to be determined by examination, written, wherever possible.

2. The expression "conditioned" signifies "subject to re-examination at the middle of the following term."

3. The regular work of each laboratory is regarded as the equivalent of five class-room exercises per week. Two consecutive hours daily in the Art department is also so regarded.

4. No special or irregular student is allowed to take less than fifteen or more than eighteen hours per week of class-room work, or its equivalent, and no student conditioned in any study will be permitted to take more than fifteen hours per week the following term.

5. At the close of each term students must pass in examinations in studies, representing at least ten hours per week, in order to retain their standing in college.

6. Students conditioned in studies, representing ten hours per week, must pass satisfactory examinations, in at least one-half of those studies before regaining their standing in college.

7. Students failing in examinations, representing ten hours per week, forfeit their place in college thereby.

8. Students who fail in the term examinations, or in an examination for conditions, are required to take the study or studies in which they fail, on their occurrence, in the following year, except when excused by the faculty.

9. Students failing on a re-examination for a condition, are dropped from that class, if a continuous one.

10. Absence from any examination is construed as a failure therein.

11. Students in any three-term class who fail to attain the grade "passed" at the end of more than one term, shall be required to repeat the work of the whole year, unless excused by the professor in charge; and the students in any two-term class who are reported as "failed" at the end of the second term, may be required by the professor in charge to repeat both terms' work.

#### TERM BILLS.

The payment of term bills is required of all students by the second Wednesday of each term, as the condition of remaining in college.



## CALENDAR.

The Winter term commences on Thursday, January 4, 1883, and continues 12 weeks, closing on Wednesday, March 28.

The Spring term commences on Thursday, April 5, and continues 11 weeks, closing on Wednesday, June 20 (Commencement Day).

The Fall term commences on Thursday, September 13, and continues 14 weeks, closing on Wednesday, December 19.

## CATALOGUE OF STUDENTS.

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The following catalogue includes only the names of students in attendance from November 1st, 1881, to November 1st, 1882:

The under graduate students of the University are classified as follows: —

- (1.) Regular Students.
- (2.) Special Students.
- (3.) Preparatory Students.

The first division includes the four college classes; the second includes students that have attained college rank, by completing the preparatory course or its equivalent, but are now pursuing selected studies; the third includes students that are pursuing the regular preparatory course.

Heretofore there has been a fourth group of Unclassified Students, including all not embraced in the three divisions above named.

But with the beginning of the current year the following plan of classification was put into operation:

1st. The various departments of the University will hereafter be classified in four schools, designated as follows:

**THE SCHOOL OF ARTS AND PHILOSOPHY**, including those studies which enter into the courses leading to the degree of Bachelor of Arts and Bachelor of Philosophy.

**THE SCHOOL OF SCIENCE**, including those studies which enter into the course leading to the degree of Bachelor of Science.

**THE SCHOOL OF ENGINEERING**, including those studies which enter into the courses leading to the degrees of Civil Engineering, Mechanical Engineer, and Mining Engineer.

**THE SCHOOL OF AGRICULTURE**, including those studies which enter into the course leading to the degree of Bachelor of Agriculture.

2nd. Every student (resident graduates alone excepted) shall enter one of the above schools, or shall be assigned to that one in which the majority of his studies are found (in case of irregularity).

There shall be no unclassified students.

3rd. Each school will be under the direction of a standing committee of the faculty, having power to act in all matters pertaining to

the studies of students in such school, and in matters of minor discipline. The following Committees have been appointed for the various schools:

**ARTS AND PHILOSOPHY**—The President, the Professors of Latin and Greek, History, Geology, Chemistry, and French and German.

**SCIENCE**—The President, the Professors of Mathematics, Chemistry, Physics, Geology and Zoology.

**ENGINEERING**—The President, the Professors of Civil Engineering, Mechanical Engineering, Mining Engineering, Physics, and Drawing.

**AGRICULTURE**—The President, the Professors of Agriculture, Horticulture, Mechanics, Metallurgy, and Zoology.

4th. All students in each school will be regarded as belonging to one of two groups; first, those whose purpose it is to enter upon one of the regular courses of study, with the expectation of taking its degree; second, those who come to the University for the purpose of pursuing some special study or line of work, and who do not expect to take a degree.

The courses of study leading to the various degrees having been arranged by the faculty in the order which they believe to be the best adapted to the general requirements of students, *all who do not belong to the second of the groups indicated*, will be required to enter upon the regular work of the college classes to which they belong, or in case of present irregularity to remove such irregularity as speedily as practicable in the manner prescribed by the committee of the school in which they are classed, and no such student will be allowed to take more or other than his regular studies without presenting a request with reason therefor to his committee, and receiving its consent. Such consent may be revoked at any time when it may seem advisable to do so.

Students belonging to the second group, viz.: those coming to the University for a limited time with the definite purpose of pursuing some special line of work, will in each case enter the school in which their proposed work is chiefly included, and shall lay before the committee a statement of the end in view, the studies proposed for the accomplishment of that end, and the probable period of residence.

While it will be the purpose of each committee, in accordance with the well established policy of the University, to allow to such students full freedom in the selection of the branches which they desire to pursue, subject only to the necessary limitations that they are prepared to take up the branches they select, and that such branches are in accordance with the end proposed, it is also their intention to hold students as regularly to the performance of their accepted schemes of work as they do the members of the first group to their prescribed course of study;

and they will refuse admission to this group to all of whose definiteness of purpose or fitness to undertake the work proposed they fail to receive satisfactory evidence.

5th. The names of students as printed in the University catalogue shall be followed by the proper abbreviations of the schools to which they respectively belong. Regular students shall be published as belonging to the college classes to which they are assigned by their respective committees. Students pursuing particular lines of work shall, if they have attained college standing, be published as special students; if otherwise, as irregular preparatory.

In accordance with the requirements of the foregoing classification, the students not included in the regular classes, and who have not yet attained a college standing by completing all preparatory studies, are published as Irregular Preparatory.

NOTE: The abbreviations of the several schools are not appended to the names of students in the following catalogue; but they will be appended hereafter in the annual catalogue according to the requirement specified in the fifth paragraph of the plan of classification above described.

By a recent resolution of the Board of Trustees, the portion of the Annual Report of the University included under the heading, "CIRCULAR AND CATALOGUE", will be made to correspond with the academic year of the University terminating at Commencement, and not (as heretofore) with the fiscal year of the State, terminating in November.

Degrees in course were conferred at the last commencement, June 21st, 1882, as follows:

The degree of Mining Engineer upon DAVID O'BRINE, B.Sc.

#### CLASS OF 1882.

WILLIAM W. DONHAM, B.Sc.

WILLIS F. FAY, B.A.

FREDERIC KEFFER, M.E.

JOHN A. McDOWELL, B.Sc.

OLIVER L. FASSIG, B.Sc.

SIoux GLOVER, B.Sc.

IRVIN LINTON, B.A.

CORA WARNER, B.Ph.

HORACE L. WILGUS, B.Sc.

RESIDENT GRADUATES.

Name.	Residence.	County.
DAVID O'BRINE, B.Sc., M.E.....	Ohio State University, Columbus	Franklin.
OLIVER L. FASSIG, B.Sc.....	" "	"
JOHN A. McDOWELL, B.Sc.....	" "	"
HORACE L. WILGUS, B.Sc.....	" "	"

POST GRADUATES.

Name.	Residence.	County.
BRINKERHOFF, WARREN E., B.Sc., Heidelberg .....	Tiffin .....	Seneca.
GOW, ALEXANDER MURDOCH, B.Sc., Washington and Jefferson.....	Washington, Pennsylvania.....	.....
MILLER, ALBERT CRAIG, A.B., Washington and Jefferson.....	Washington, Pennsylvania .....	.....
MORGAN, WILLIAM EARL, A.B., Penn.....	Lowell, Kansas .....	.....

## REGULAR STUDENTS.

Name.	Residence.	County.
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## SENIOR CLASS.

Ackerman, Fremont.....	Columbus .....	Franklin.
Bradford, Joseph Nelson.....	" .....	Franklin.
Dun, John J.....	Dublin .....	Franklin.
Galbraith, John Howard .....	Columbus .....	Franklin.
Higbee, Charles E .....	Cleveland .....	Cuyahoga.
Howard, Arthur Bascom.....	Reily .....	Butler.
Knopf, George William .....	Columbus .....	Franklin.
Makepeace, George D.....	Cleveland .....	Cuyahoga.
Marvin, Charles Frederic.....	Columbus .....	Franklin.
Miller, Charles Christian.....	Baltimore .....	Fairfield.
Sperr, Frederick William.....	Jefferson .....	Ashtabula.
Van Harlingen, Edward M.....	Columbus .....	Franklin.

## JUNIOR CLASS.

Ackerman, Eli Osborn.....	Columbus .....	Franklin.
Anderson, James Thomas.....	Columbus .....	Franklin.
Chamberlain, Helena Whiting.....	Yellow Springs.....	Greene.
Dun, George William.....	Dublin .....	Franklin.
Green, Clarence Creesy .....	Middleport .....	Meigs.
Lovejoy, Jesse R.....	Columbus .....	Franklin.
Malone, William R.....	Conneaut.....	Ashtabula.
Marple, Charles Allen .....	Columbus .....	Franklin.
Mead, Clinton Van Rensselaer.....	Jefferson .....	Ashtabula.
Mix, Melvin Noble.....	Columbus .....	Franklin.
Orton, Edward, Jr.....	Columbus .....	Franklin.
Sabine, Anna Ware .....	Richwood .....	Union.
Sparks, Edward Erle.....	London .....	Madison.
Vanderburg, Charles Russell.....	Columbus .....	Franklin.
Wikoff, John Burkett.....	Columbus .....	Franklin.

## SOPHOMORE CLASS.

Benedict, Edward Cyrus.....	Dayton .....	Montgomery.
Erskine, John Geddes.....	Lowellville.....	Mahoning.
Hale, John Perley.....	Mansfield.....	Richland.
Harrison, William Henry.....	Columbus.....	Franklin.
Lindenberg, Louis Bisky.....	Columbus.....	Franklin.
Marquardt, Jesse Claud.....	Tiffin .....	Seneca.
Miller, Charles William... ..	Columbus.....	Franklin.
Peters, William Lincoln.....	Columbus.....	Franklin.
Pleukharp, Charles Vernon.....	Columbus.....	Franklin.
Pomerene, William Reed.....	Coshocton.....	Coshocton.
Schaub, Edward Louis Tacher .....	Columbus .....	Franklin.
Taylor, Francis Asbury.....	Columbus.....	Franklin.
Terry, Harry Kirk.....	Columbus.....	Franklin.
Twiss, George Ransom.....	Columbus.....	Franklin.
Wall, Frank Thomas.....	Marysville.....	Union.

## REGULAR STUDENTS.—Continued.

Name.	Residence.	County.
FRESHMAN CLASS.		
Armstrong, Philip Damascus.....	Tippecanoe City.....	Miami.
Beach, Charles Maxwell.....	Kelloggsville.....	Ashtabula.
Beatty, George William.....	Columbus.....	Franklin.
Benbow, William.....	Columbus.....	Franklin.
Bentley, William Preston.....	Wilmington.....	Clinton.
Bingham, Harry.....	Columbus.....	Franklin.
Bird, Minnie Elma.....	Zanesville.....	Muskingum.
Calderhead, James A.....	Limaville.....	Stark.
Carroll, Clara.....	St. Clairsville.....	Belmont.
Comly, Guy Stuart.....	Columbus.....	Franklin.
Connell, William Adams.....	Portsmouth.....	Scioto.
Converse, Edward Jasper.....	Columbus.....	Franklin.
Coulter, Guy.....	Columbus.....	Franklin.
Cunningham, George Strode.....	Lancaster.....	Fairfield.
Davidson, Arthur.....	Findlay.....	Hancock.
Devol, Anna Laura.....	Marietta.....	Washington.
Dozer, Martin Theodore.....	Deavertown.....	Morgan.
Dye, John W.....	Zanesville.....	Muskingum.
Eastman, John Coates.....	West Alexandria.....	Preble.
Fassig, Alice Anna.....	Columbus.....	Franklin.
Fisher, Clara.....	Columbus.....	Franklin.
Foster, Newton Poage.....	Sharonville.....	Pike.
Gilbert, Newton Whiting.....	Angola, Ind.....	.....
Gordon, George Henry.....	Columbus.....	Franklin.
Heinlein, Andrew John.....	Bridgeport.....	Belmont.
Hill, Frank Edwin.....	Neville.....	Clermont.
Hirst, Charles Hubert.....	Columbus.....	Franklin.
Holliday, Thomas Ellsworth.....	Cassville.....	Harrison.
Jones, Alfred Andrew.....	Columbus.....	Franklin.
Lacy, William Crawford.....	Youngstown.....	Mahoning.
Masters, George Albert.....	Toledo.....	Lucas.
McMurray, John Leathers.....	Columbus.....	Franklin.
Milligan, James Porter.....	Rushville.....	Fairfield.
Mills, Stephen A.....	Washington C. H.....	Fayette.
Negelspach, Otto.....	Millersburg.....	Holmes.
Fayne, Halbert Edwin.....	Titusville, Pennsylvania.....	.....
Pfaff, Carl Philip.....	Columbus.....	Franklin.
Sabine, Wallace Clement.....	Richwood.....	Union.
Schroll, Otto.....	Columbus.....	Franklin.
Scott, Anna Neill.....	Columbus.....	Franklin.
Scott, May Mermod.....	Columbus.....	Franklin.
Scott, Minnie Odella.....	Columbus.....	Franklin.
Scott, Winfield.....	Columbus.....	Franklin.
Sheperd, Jacob Lincoln.....	Osborne.....	Greene.
Smart, George.....	Chillicothe.....	Ross.
Sneath, Ralph D.....	Tiffin.....	Seneca.
Snyder, David Forrest.....	Springfield.....	Clarke.
Stockwell, Harry Leonard.....	Columbus.....	Franklin.
Thompson, Howard N.....	Columbus.....	Franklin.
Thurston, Azor.....	Grand Rapids.....	Wood.
Viets, William Burton.....	Amboy.....	Ashtabula.
Warner, Annie Laurie.....	Marietta.....	Washington.
Watt, Sern Parley.....	Jamestown, Nebraska.....	.....

## SPECIAL STUDENTS.

Name.	Residence.	County.
Ashinger, Frank Christopher.....	Upshur .....	Preble.
Braun, Charles Lincoln.....	Columbus .....	Franklin.
Brotherton, William.....	Columbus .....	Franklin.
Conaway, John Wilbur.....	Arcadia .....	Hancock.
Lovejoy, Ellis.....	Columbus .....	Franklin.
Miller, William Henry.....	McArthur .....	Vinton.
Moore, Alvin A.....	Kenton .....	Hardin.
Morrison, Ella Hortense.....	Washington, D. C.....	.....
Morton, George Luton.....	South Newbury.....	Geauga.
Selby, Augustine Dawson.....	Bartlett .....	Washington.
Smith, Horace Prescott.....	Adam's Mills.....	Muskingum.
Smith, Philo Christopher.....	Canton .....	Stark.
Tallmadge, Theodore.....	Columbus .....	Franklin.
Warner, Carrie Ellis.....	Marietta.....	Washington.
Westfall, La Fayette.....	Covington .....	Miami.

## PREPARATORY STUDENTS.

Name.	Residence.	County.
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## SECOND YEAR.

Alspach, Edmund Frank.....	Canal Winchester.....	Fairfield.
Ballou, Harry Augustus.....	Columbus .....	Franklin.
Cathcart, Josie Maud.....	Columbus .....	Franklin.
Converse, Howard Pendleton.....	Columbus .....	Franklin.
Cooke, Russel Pardon.....	Chillicothe .....	Ross.
Cupp, Frank Pickering.....	Columbus .....	Franklin.
Devol, William Stow.....	Marietta.....	Washington.
Dick, Harry Bancroft.....	Hopewell P. O .....	Muskingum.
Dowsett, Edward.....	Honolulu, Sandwich Islands.....	.....
Erskine, James H.....	Lowellville .....	Mahoning.
Fawcett, Joseph Mitchel.....	Carrollton ..	Carroll.
Fickel, Isaac Harrison.....	Hilliard .....	Franklin.
Firestone, Joseph F.....	Canton .....	Stark.
Floyd, Stephen Ellsworth.....	Wintersville .....	Jefferson.
Gordon, John La Fayette.....	Worthington .....	Franklin.
Haig, James.....	Columbus .....	Franklin.
Hamilton, Thomas Benton.....	Columbus .....	Franklin.
Hoover, Ellis A.....	West Milton.....	Miami.
Howells, Edwin Stanton.....	Massillon .....	Stark.
Jackson, Jonathan.....	Vevay, Ind.....	.....
Keifer, William White.....	Springfield .....	Clarke.
Lucas, Mary Eliza.....	West Jefferson .....	Madison.
Madden, Harry P.....	Mutual .....	Champaign.
Martin, Franz Siegle.....	Bloomville .....	Seneca.
Martin, Frank Wilson.....	Bloomville .....	Seneca.
McKee, Caleb Lodge.....	Columbus .....	Franklin.
McKinney, William Henry.....	Morrow .....	Warren.
McLaughlin, James Bennett.....	Columbus .....	Franklin.
McLaughlin, John Rushmore.....	Columbus .....	Franklin.
McPherson, William, Jr.....	Xenia.....	Greene.
Merion, James Edwin.....	Columbus .....	Franklin.



PREPARATORY STUDENTS—Continued.

Name.	Residence.	County.
SECOND YEAR—Continued.		
Miller, Frank.....	Crestline .....	Crawford.
Mullay, Anna .....	Columbus .....	Franklin.
Munger, John Charles.....	Xenia.....	Greene.
Myers, Joseph Simmons.....	Columbus .....	Franklin.
Myers, Uriah Henry.....	Columbus .....	Franklin.
Nauman, William Henry.....	Dayton.....	Montgomery.
Neil, Flora .....	Columbus .....	Franklin.
Neil, William.....	Columbus .....	Franklin.
Niswander, Albert .....	Central College.....	Franklin.
O'Harra, Arthur.....	Columbus .....	Franklin.
Oxer, Orange Eddy .....	Campbellstown .....	Preble.
Peasley, Hattie A.....	Flint .....	Franklin.
Sain, Charles Magnite.....	Logan.....	Hocking.
Scheibell, William Oliver.....	Columbus .....	Franklin.
Smith, Charles Piatt.....	Clintonville .....	Franklin.
Smith, Lot Leonard .....	Columbus .....	Franklin.
Spurgeon, Mattie Amelia.....	Clintonville .....	Franklin.
Taylor, Joseph Russell .....	Columbus .....	Franklin.
Thurston, Ella.....	Grand Rapids .....	Wood.
Wade, William Nicholas.....	Columbus .....	Franklin.
Welsh, Emmet Alvin.....	Deersville .....	Harrison.
Williams, Paul Sidney .....	Scioto Furnace .....	Scioto.
Wilsey, Glenni Sill.....	Conneaut .....	Ashtabula.
Woods, Horace Allen .....	Chilo .....	Clermont.

PREPARATORY STUDENTS.

Name.	Residence.	County.
FIRST YEAR.		
Baird, Chester Reamy.....	Columbus .....	Franklin.
Beatty, William Gurley .....	Columbus .....	Franklin.
Bentley, Elton Monroe.....	Wilmington .....	Clinton.
Blankner, Frederick, Jr.....	Columbus .....	Franklin.
Blinn, Minnie Folia.....	Columbus .....	Franklin.
Breyfogle, Fred Sherman.....	Columbus .....	Franklin.
Browne, Louie F.....	Columbus .....	Franklin.
Burkley, Joseph Frank.....	Columbus .....	Franklin.
Burns, George Burgess .....	Troy .....	Miami.
Byers, Albert Gallation.....	Columbus .....	Franklin.
Campbell, William Edward.....	Groveport .....	Franklin.
Carroll, Harley P .....	Potsdam .....	Miami.
Charters, William Filson.....	New Lisbon .....	Columbiana.
Clark, Cheever Simpson.....	Deersville .....	Harrison.
Comly, Smith Mitchel.....	Columbus .....	Franklin.
Comly, Susie Anthony .....	Columbus .....	Franklin.
Cook, Cora Estella.....	Harlem .....	Delaware.
Cook, Ida .....	Columbus .....	Franklin.

## PREPARATORY STUDENTS—Continued.

Name.	Residence.	County.
FIRST YEAR—Continued.		
Craig, Moses.....	Peakpack, N. J .....	.....
Daggett, William Frederic.....	Napoleon.....	Henry.
Doe, Carrie Ella .....	Columbus .....	Franklin.
Dunlap, William Perry .....	Columbus .....	Franklin.
Durrell, Harry Philip .....	Pleasant Ridge .....	Hamilton.
Dyer, Joseph Hooker .....	Georgesville .....	Franklin.
Eck, Marcus W.....	Middletown .....	Butler.
Elliott, Frederic Wallace .....	Columbus .....	Franklin.
Emery, Vernon Judson .....	Napoleon .....	Henry.
Falkenbach, Frank Joseph .....	Columbus .....	Franklin.
Forse, Joseph Clark... ..	Pittsburgh, Pa.....	.....
Fox, Edgar B.....	LaFayette .....	Madison.
Frame, Cornelius Aultman .....	Washington .....	Guernsey.
Fravel, George B.....	Columbus .....	Franklin.
Galloway, Frank Calvert .....	Terrace Park .....	Hamilton.
Garrett, Howard Thompson .....	Columbus .....	Franklin.
Gates, Harry Morton .....	Columbus .....	Franklin.
Godman, Leonard Harper .....	Columbus .....	Franklin.
Graves, Joseph Howard.....	Columbus .....	Franklin.
Gregg, George Crouse .....	Circleville.....	Pickaway.
Grube, Dora E.....	Clintonville .....	Franklin.
Gunn, George Erastus.....	Mentor.....	Lake.
Guy, Rolla Bradley .....	Mechanicsburg .....	Champaign.
Hall, Bertha.....	Pleasant Corners.....	Franklin.
Harmon, Maud.....	Columbus .....	Franklin.
Harris, Thomas Charles.....	Ironton .....	Lawrence.
Hayes, Seth .....	Columbus .....	Franklin.
Hedges, Harry.....	Urbana .....	Champaign.
Herd, Joseph Ephraim.....	Clintonville .....	Franklin.
Hess, William Gralys .....	Columbus .....	Franklin.
Higgins, Patrick James.....	Summerford .....	Madison.
Hildebrand, Charles Quinn.....	Wilmington .....	Clinton.
Howell, Addis Emmet.....	Flushing .....	Belmont.
Hull, Richard Edie.....	Columbus .....	Franklin.
Iuen, John Francis.....	Milford .....	Clermont.
Jennings, Carl Marsh... ..	Mutual .....	Champaign.
Jones, Richard .....	Columbus ..	Franklin.
Kemmler, Edward Albert.....	Columbus .....	Franklin.
Kennedy, Clark H.....	Youngstown.....	Mahoning.
Legg, John Newton.....	Columbus .....	Franklin.
Luccock, Henry Havelock.. ..	Kimbolton .....	Guernsey.
Luse, Elliott .....	Barry .....	Cuyahoga.
Maetzell, Henry Montezuma.....	Columbus .....	Franklin.
Martin, Hannah L.....	Camp Chase.....	Franklin.
McCoy, Thomas A.....	Seville .....	Medina.
McDaniel, William Foreman.....	Celina.....	Mercer.
McNaghten, Noah .....	Columbus .....	Franklin.
Miller, Mary Ellen.....	Baltimore ..	Fairfield.
Miller, Thomas Ewing, Jr.. ..	Columbus .....	Franklin.
Mix, Edgar Woods.....	Columbus .....	Franklin.
Monypeny, George Bronson.....	Columbus .....	Franklin.
Needles, Ada.....	Groveport.....	Franklin.
Needles, Blanche.....	Groveport.....	Franklin.

PREPARATORY STUDENTS—Continued.

Name.	Residence.	County.
FIRST YEAR—Continued.		
Needles, Cora.....	Groveport.....	Franklin.
Neil, Olive.....	Columbus.....	Franklin.
Neill, James John.....	Sandusky.....	Erie.
Noel, Elijah Putnam.....	Portsmouth.....	Scioto.
Peebles, Milton Wood.....	Chester Hill.....	Morgan.
Perry, Susan E.....	Columbus.....	Franklin.
Price, Mark Elmer.....	Newark.....	Licking.
Rardin, Joseph Spangler.....	Bartlett.....	Washington.
Raymund, Frank Milton.....	Basil.....	Fairfield.
Rich, John Edward.....	Columbus.....	Franklin.
Robinson, Edmund Letts.....	Coshocton.....	Coshocton.
Samuel, Edward.....	Westerville.....	Franklin.
Samuel, Frank Ellsworth.....	Westerville.....	Franklin.
Sayler, Lurten Roscoe.....	Gratis P. O.....	Preble.
Scarff, William Neff.....	New Carlisle.....	Clarke.
Shanck, John Emmet.....	Union.....	Montgomery.
Shedd, Carlos Butler.....	Columbus.....	Franklin.
Shields, Harry Clifton.....	Columbus.....	Franklin.
Smith, John Samuel.....	Columbus.....	Franklin.
Smith, Rose.....	Clintonville.....	Franklin.
Stephens, Herbert Taylor.....	Columbus.....	Franklin.
Stimmel, Thomas Randall.....	Columbus.....	Franklin.
Stimson, George Henry.....	Columbus.....	Franklin.
Thompson, Anna Elizabeth.....	Flint.....	Franklin.
Tussing, Harry.....	Columbus.....	Franklin.
Wasson, William Alfred.....	Columbus.....	Franklin.
Whiteley, Frederic Patterson.....	Findlay.....	Hancock.
Wilbur, E. C.....	Weymouth.....	Medina.
Wilgus, James Alva.....	Conover.....	Miami.
Willim, William Benjamin.....	Stillwater, Minn.....	.....
Winter, Charles Albert.....	Portsmouth.....	Scioto.
Woodworth, Henry Julian.....	Jefferson.....	Ashtabula.

IRREGULAR PREPARATORY.

Name.	Residence.	County.
Alwood, William Bradford.....	Columbus.....	Franklin.
Amy, Charles Sumner.....	Payn's Corners.....	Trumbull.
Barren, Henry A.....	Cleveland.....	Cuyahoga.
Beebe, Stacey Barcroft.....	Coshocton.....	Coshocton.
Bixler, William Irving.....	Pyrmont.....	Montgomery.
Blackford, Francis Webster.....	Chillicothe.....	Ross.
Breaden, Robert Mackey.....	Youngstown.....	Mahoning.
Bryson, William Abbott.....	Dunlapsville, Ind.....	.....
Campbell, William Wallace.....	Fostoria.....	Seneca.
Claypoole, Alice.....	Columbus.....	Franklin.
Claypoole, Curtis.....	Columbus.....	Franklin.

## IRREGULAR PREPARATORY—Continued.

Name.	Residence.	County.
Clouse, William Leonard.....	Granville .....	Licking.
Cook, Nannie Jane.....	Bridgeport .....	Belmont.
Cottingham, Fenton G.....	Sharon Center .....	Medina.
Dennis, Frank Foster .....	Amanda .....	Fairfield.
Denver, James William .....	Wilmington.....	Clinton.
DeWitt, Clara .....	Norwalk .....	Huron.
Dickey, Clarence Walter .....	Central College .....	Franklin.
Dickey, Marcus Cortland.....	Central College .....	Franklin.
Fay, Waldo Guy.....	Columbus .....	Franklin.
Fox, Herman S.....	Brookville .....	Montgomery.
Fuller, Ralph Lathrop .....	Elyria .....	Lorain.
Gehres, Joseph Abraham .....	Marshallville ....	Wayne.
Gladding, Jay Elisha.....	Rock Creek.....	Ashtabula.
Green, William James .....	Granger .....	Medina.
Greise, Emanuel.....	Cleveland .....	Cuyahoga.
Guy, Samuel B.....	Jefferson .....	Ashtabula.
Hale, John Park.....	Bath .....	Summit.
Heinlein, Charles Joseph .....	Bridgeport .....	Belmont.
Henderson, Lutrelle ....	Marysville .....	Union.
Hendrixson, Oliver Perry .....	Columbus .....	Franklin.
Herms, Albert Edward.....	Portsmouth .....	Scioto.
Hoge, Osmond M.....	Cambridge.....	Guernsey.
Holl, Benjamin Franklin.....	Canton .....	Stark.
Housel, Ransom B.....	Lake .....	Stark.
Hufford, Welton.....	South Lebanon .....	Warren.
Ide, A. J.....	Columbus .....	Franklin.
Kahler, Harry Adams.....	McConnellsville.....	Morgan.
Keene, Elmer Livingston.....	Fairfield, Oregon .....	.....
Lanphear, Oscar Alvin .....	Columbus .....	Franklin.
Laundon, Ernest Thomas.....	Elyria .....	Lorain.
Long, John Andrew .....	Sharon .....	Noble.
Maginnis, Sherdie .....	Zanesville .....	Muskingum.
Maynard, John Phillips .....	Washington C. H.....	Fayette.
Maynard, Walter Edgar .....	Washington C. H.....	Fayette.
McClelland, George B.....	Cambridge.....	Guernsey.
Miller, Ira H.....	Columbus.....	Franklin.
Mills, John William .....	West Alexandria.....	Preble.
Mills, William Cullen .....	Pyrmont .....	Montgomery.
Moore, Frank Edmund.....	Chardon .....	Geauga.
Morrison, Clarence Graham .....	Columbus.....	Franklin.
Myers, Noah .....	North Hampton.....	Clarke.
Packer, William Burt .....	Limaville .....	Stark.
Paiste, Harry Thomas.....	West Chester, Pa.....	.....
Parker, K. K.....	Columbus .....	Franklin.
Prateer, William F.....	Morrow.....	Warren.
Ratzburg, Paul William .....	Shenandoah, Pa.....	.....
Ray, Frank Arnold .....	Jefferson .....	Ashtabula.
Riser, Henry Edward .....	Columbus .....	Franklin.
Root, Willis Jay .....	Andover .....	Ashtabula.
Rowland, Oliver Lincoln .....	Pleasantville.....	Fairfield.
Scott, Daisy Medill.....	Columbus .....	Franklin.
Shedd, Harry.....	Columbus.....	Franklin.
Shellammer, William Charles.....	Clyde.....	Sandusky.
Siegel, Frank Anthony.....	Kalida .....	Putnam.
Smylie, William Harrison .....	Cadiz .....	Harrison.
Stafford, Charles Albert.....	Hillsboro .....	Highland.
Stewart, Mary A.....	Norwalk .....	Huron.
Sweeney, Thomas Daniel.....	Covington .....	Miami.

IRREGULAR PREPARATORY—Continued.

Name.	Residence.	County.
Tarbox, Theodore.....	Cedarville .....	Greene.
Taylor, John Myers.....	Columbus .....	Franklin.
Thiesen, Henry Grant.....	Napoleon .....	Henry.
Thompson, Charles Henry .....	Oregon .....	Warren.
Thompson, John Ford .....	Layman .....	Washington.
Vandervort, William P.....	Morrow .....	Warren.
Vause, William Arthur .....	Columbus .....	Franklin.
Weidman, Nellie A.....	Chillicothe.....	Ross.
Whiley, Charles Bell.....	Lancaster.....	Fairfield.
Whitacre, Elmer Ellsworth.....	Morrow .....	Warren.
Wilhelm, Frank Sherman .....	Portsmouth .....	Scioto.
Wonders, James Crew .....	Zanesfield .....	Logan.
Wolf, Edgar Hall .....	Grove City.....	Franklin.
Wright, James M.....	Fredonia .....	Licking.
Youngs, Fred Elliott.....	Alleghaney City, Pa.....	.....
Zaumseil, Oscar Clemens.....	Ripley.....	Brown.

# TREASURER'S REPORT.

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COLUMBUS, OHIO, *November 15, 1882.*

HON. JAS. B. JAMISON, *President of the Board of Trustees of the Ohio State University:*

DEAR SIR: Herewith is my twelfth annual report of the financial management of the University for the fiscal year ended this day.

The order of the report is the same as that of last year, and includes—

I. A general cash statement, showing receipts, expenditures and balances.

II. The cash transactions relating to the sale of the Virginia Military Lands, ceded to the University from 1871 to date.

III. A full statement of the Endowment Fund, held by the State and pledged to the support and maintenance of the University; to which is appended a summary statement covering the whole period of the institution from 1871 to 1882, inclusive.

IV. A detailed statement of the cash received, from whatever source, into my hands during the current year.

V. A detailed statement of the disbursements for the same period, followed by a list of officers and employes, and the salaries of each, and a statement of the minor appropriations made by the Board of Trustees.

As more or less confusion and misinterpretation of the Endowment Fund and interest account necessarily exists on account of the dates to which the interest is required by law to be calculated, I most respectfully recommend that the General Assembly be requested to amend section 8446 of the Revised Statutes, so that the calculations of interest may be made to conform to the fiscal year of the State; that the interest be computed to the 15th of May and November annually, instead of 1st of January and July, as at present.

All of which is respectfully submitted.

HENRY S. BABBITT, *Treasurer.*

## STATEMENT I.

A GENERAL STATEMENT OF THE CASH ACCOUNTS FOR THE FISCAL YEAR ENDING NOVEMBER 15, 1882.

HENRY S. BABBITT, *in account with the Ohio State University:*

## DR. -

Nov. 16, 1881.	To balance of cash on hand.....	\$4,062 35
	To cash from various sources, as follows, viz:	
	From the State Treasury on account of the income of the Endowment Fund, being balance of interest ac- crued to July 1, 1881 .....	\$10,000 00
	Interest accrued from July 1, 1881, to January 1, 1882.....	16,961 33
	On account of (\$16,660.40) the in- terest accrued from January 1, 1882, to July 1, 1882.....	4,660 40
		<hr/>
	Total interest received.....	\$31,621 73
	From the State Treasury, the amount appropriated toward paying the ex- penses of the Board of Trustees.....	\$350 00
	From students' term bills, viz.:	
	For winter term, 1881-2.....	\$1,577 75
	Spring term, 1882.....	1,435 00
	Fall term, 1882.....	2,083 00
		<hr/>
		\$5,095 75
	From proceeds of notes received for sale of Virginia Military Lands.....	\$6,042 03
	Interest on such notes.....	985 45
	Sale of Virginia Military Lands.....	750 12
		<hr/>
		\$7,777 60
	From rent of houses:	
	President Scott.....	\$385 00
	Professor Townshend.....	300 00
	Professor Derby.....	240 00
		<hr/>
		\$925 00
	From Prof. Norton for sale of supplies to students.....	198 35
		<hr/>
	Total receipts during the year.....	\$45,968 43
		<hr/>
	Total receipts, including above balance.....	\$50,030 78

## CONTRA, CR.

Nov. 15, 1882.	By disbursements as follows (for particular items, see detailed state- ment V.):	
	For support and maintenance of the University, viz.:	
	For salaries of faculty, teachers, assistants, other officials and regular employes.....	\$30,039 96

Nov. 15, 1892.	For expenses of Board of Trustees.....	474 15	
	“ fire insurance.....	448 06	
	“ fuel .....	732 77	
	“ telephone service.....	125 00	
	“ other current expenses.....	1,292 16	
		<hr/>	\$33,112 10
	For department supplies.....	\$3,254 89	
	“ furniture, not included in dep’t supplies...	174 10	
	“ library .....	273 17	
	“ farm and lawn expenses.....	529 90	
	“ improvements .....	116 00	
	“ repairs .....	874 36	
		<hr/>	\$5,222 42
	For expenses in care of Va. Military Lands...	\$847 84	
	“ account of construction of three residences	6,335 01	
		<hr/>	\$7,182 85
		<hr/>	
Total disbursements.....			\$45,517 37
Balance of cash on hand this day.....			4,513 41
			<hr/>
Total receipts, as above.....			\$50,030 78

## STATEMENT II.

## VIRGINIA MILITARY LAND SALES.

The cash receipts into the college treasury from the proceeds of the sales of these lands, as reported to November 15, 1881 (page 88 of 11th annual report), were .....		\$38,787 85
Add to this proceeds of sale by the Auditor of State, in 1877, not heretofore included in this statement.....		1,592 56
Receipts during fiscal year, 1882.....		7,777 60
		<hr/>
Total receipts to November 15th, 1882.....		\$48,158 01
Total expenses on this account to November 15, 1881, as stated in the last annual report.....	\$18,281 22	
Expenses in 1882 .....	847 84	
	<hr/>	
Total expenses to date .....		\$19,129 06
		<hr/>
Balance showing net receipts to date.....		\$29,028 95
Of this amount there was paid into the State Treasury to the credit of the endowment fund (in compliance with Section 8433 of the Revised Statutes) June 29, 1880.....	\$12,073 28	
And the sum certified to by the Auditor of State pursuant to Joint Resolution of the General Assembly, adopted April 24, 1877.....	1,592 56	
	<hr/>	
Total paid into the endowment fund.....		\$13,665 84
		<hr/>
Leaving net cash proceeds to date.....		\$15,363 11



STATEMENT III.

SHOWING THE AMOUNT OF THE OHIO STATE UNIVERSITY ENDOWMENT FUND, COMPUTED  
IN ACCORDANCE WITH THE PROVISIONS OF THE ACT PASSED FEBRUARY 10, 1870,  
(Revised Statutes, Sec. 8446.)

Amount of apparent principal, as reported last year, to July  
1, 1881 ..... \$555,346 69  
Add interest on this sum, to January 1, 1882..... \$16,660 40  
Less payments made during same period :

Aug. 10, 1881,	\$1,961 33,	with interest to Jan. 1, 1882, 4 mos. 20 days...	\$15 77
Oct. 6, 1881,	2,500 00,	" " 2 " 21 " ...	35 00
Nov. 5, 1881,	2,500 00,	" " 1 mo. 15 " ...	18 75
Dec. 10, 1881,	2,500 00,	" " 20 " ...	8 33
Dec. 23, 1881,	2,500 00,	" " 7 " ...	2 91
Dec. 31, 1881,	2,500 00,	" " ... " ...	.....
	<u>\$14,461 33</u>		<u>\$110 76</u>

Total ..... 14,572 09

Net additions to principal..... 2,088 31

Making the apparent principal January 1, 1882..... \$557,435 00  
Add interest on this amount to July 1, 1882 ..... \$16,723 04  
Less payments made during the same period, as follows :

Jan. 31, 1882,	\$2,500 00,	with interest to July 1, 1882, 5 mos. ... days...	\$62 50
Febr. 28, 1882,	1,961 33,	" " 4 " ... " ...	39 21
Mar. 31, 1882,	3,000 00,	" " 3 " ... " ...	45 00
May 18, 1882,	3,000 00,	" " 1 mo. 12 " ...	21 00
June 30, 1882,	5,000 00,	" " 0 " ... " ...	.....
	<u>\$15,461 33</u>		<u>\$167 71</u>

Total ..... 15,629 04

Net additions to principal..... 1,094 00

Apparent principal July 1, 1882..... \$558,529 00  
Interest upon this sum, calculated under the provisions of Sections 8433  
and 8446 of the Revised Statutes, for the year 1882-3, payable Janu-  
ary 1, 1883, and July 1, 1881, will amount to..... \$33,511 74

I repeat the observations I made under this head upon page 84 of the tenth annual report.

In order that there may be no misunderstanding in regard to the amount of the Irreducible Fund of the University in the State Treasury, it is proper to state, that the undrawn balance of accrued interest to July 1, 1882, is included in the above (apparent) principal sum. Requisitions having been made for the same before July 1st, it may be drawn and disbursed ; this accrued sum amounts to \$20,660.40, and will be drawn as needed. It will be observed by the statement IV of receipts, that \$8,660.40 of this sum has been drawn since July 1st, leaving \$12,000.00 of the requisitions of the

Commissioners of the Sinking Fund in my possession at this date. The expenditure of all of this sum leaves the *actual* amount of the Irreducible Endowment Fund, \$537,868.60.

## SUMMARY STATEMENT.

I append a "Summary Statement of the Endowment Fund" from the beginning in 1871.

Amount of fund as reported by the Auditor of State on Jan. 1st, 1871, \$435,138.29.

Interest accruing to the same, and amounts drawn from the State Treasury from January 1, 1871, to July 1 1882, as follows:

Years.	Interest accrued.	Amounts drawn.
1871.....	\$25,753 81	\$35,745 00
1872.....	29,393 54	2,200 00
1873.....	29,966 66	12,500 00
1874.....	31,022 04	2,800 00
1875.....	31,245 16	29,000 00
1876.....	31,960 46	33,000 00
1877.....	31,668 79	30,903 73
1878.....	31,927 03	27,488 45
1879.....	32,079 61	30,196 81
1880.....	33,006 67	27,866 00
1881.....	17,163 80	21,445 00
1882.....	33,104 97	29,922 66
Totals .....	\$358,292 54	\$283,067 65

These aggregate amounts, with some fluctuations in the statement of the annual items, correspond exactly with the amount of the annual statements made by the Auditor of State in his statement of the entire irreducible debt of the State, which consists of several other funds beside the University Fund.

Amount of fund as reported by Auditor as above.....	\$435,138 27
Total accrued interest.....	358,292 54
Add amount of bonds received from Franklin county and placed in the State Treasury in 1871, which was paid in 1881, and the proceeds credited to the Endowment Fund, according to act of June 21, 1871	34,500 00
Add also amount of net proceeds of sales of Virginia military lands, by authority of Joint Resolution of the General Assembly, adopted April 24, 1877.....	1,592 56

Amount of proceeds of such sales paid into the State Treasury by Treasurer of the University in 1880.....	12,073 28
--	-----------

Total fund and accumulations to July 1, 1882 .....	\$841,596 65
Deduct amounts drawn from the Treasury in same time.....	283,067 65

Leaving apparent principal July 1, 1882.....	\$558,529 00
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The amount drawn out in 1871 includes \$34,245 specially authorized by Act of January 21, 1871, being one-tenth part of the net proceeds of the sale of the Land Scrip donated to the State by the General Government. The calculations of interest up to 1880, inclusive, were made to the end of the calendar year, after the close of the fiscal year, and the amounts drawn were also stated to the close of the fiscal year (November 15th.) The calculations of interest, and the amounts drawn in the past two years, are made to July 1st, respectively.

STATEMENT IV.

SHOWING IN DETAIL THE CASH RECEIPTS FROM ALL SOURCES DURING THE FISCAL YEAR ENDING NOVEMBER 15, 1882, BY HENRY S. BABBITT, TREASURER.

Date.	From whom received, and on what account.	Amount.	Total.
1881.			
Nov. 16	Balance of cash on hand.....		\$4,062 35
18	James Parks, Va. Military Land, note.....	\$30 00	
	"                    "            interest.....	1 80	
	Samuel Brown,                    "            interest.....	2 00	
25	J. F. Miles,                    "            notes (3) .....	120 60	
	"                    "            interest.....	21 22	
30	Robert Smith,                    "            note.....	31 00	
	"                    "            interest.....	4 10	
	Leroy Moss,                    "            notes (2).....	16 00	
	"                    "            interest.....	80	
Dec. 1	Vinson Beaver,                    "            note.....	32 47	
	"                    "            interest.....	9 75	
3	Prof. S. C. Derby, house rent for November.....	20 00	
10	Andrew Pollock, Va. Military Land, notes (2)....	155 00	
			444 74
	State Treasury, interest on endowment.....		2,500 00
23	"                    "            .....		2,500 00
	S. C. Derby, house rent for December .....	\$20 00	
	E. Pendleton, Va. Military Land, notes (2).....	50 00	
	"                    "            interest.....	16 00	
			86 00
28	W. Q. Scott, Pres't., house rent Oct. 1 to June 1..		105 00
30	Henry Morten, Va. Military Land, notes (3).....	\$149 17	
	"                    "            interest.....	8 95	
	Johnson Allen,                    "            notes (2).....	78 44	
	"                    "            interest.....	10 48	
			247 04
31	State Treasury, interest on endowment.....		2,500 00
1882.			
Jan. 12	Samuel Hopper, Va. Military Land, interest.....	\$2 47	
	Andrew Spence,                    "            note.....	62 43	
	"                    "            interest.....	28 57	
	Mitler & Bunn,                    "            notes (3)....	46 86	
	"                    "            interest.....	6 20	
			146 53
31	J. F. Miles, Va. Military Land, notes (3).....	\$39 75	
	"                    "            interest.....	7 81	
	Henry Morten,                    "            notes (7).....	380 82	
	"                    "            interest .....	23 80	
	Isaac Smalley,                    "            note.....	19 00	
	"                    "            interest.....	2 50	
	W. W. Compton,                    "            note.....	30 00	
	"                    "            interest.....	2 52	
	S. C. Derby, house rent for January .....	20 00	
			526 20
	State Treasury, interest on endowment .....		2,500 00
Feb. 8	John McCoy, Va. Military Land, note.....	\$11 17	
	"                    "            interest.....	1 63	
	David Evans,                    "            note.....	16 00	
	"                    "            interest.....	3 40	
	Sam'l Redman,                    "            note.....	43 75	
	"                    "            interest.....	5 65	
	Wm. Staley,                    "            note .....	20 00	
9	"                    "            interest.....	5 00	
			106 60

## STATEMENT IV—Continued.

Date.	From whom received, and on what account.	Amount.	Total.
1882.			
Feb. 9	Samuel Wood, Va. Military Land, note.....	\$38 55	
	“ “ interest.....	6 45	
	A. R. Dugan, “ note.....	25 00	
	“ “ interest.....	4 40	
			\$74 40
28	Prof. R. W. McFarland, Bursar, winter term bills:		
	Incidental fees.....	\$1,277 50	
	Chemical Laboratory fees.....	220 00	
	Physical “.....	63 00	
	Stall rent.....	17 25	
		\$1,577 75	
	S. C. Derby, house rent for February.....	20 00	
	Samuel Wood, balance Va. Military Land, note..	6 45	
	J. G. Freeman, Va. Military Land, note.....	14 00	
	J. R. English, “.....	76 90	
	“ “ interest.....	4 61	
	B. Holton, “ note.....	30 50	
	“ “ interest.....	9 50	
			1,739 71
March 11	State Treasury, interest on endowment.....		1,961 33
	Samuel N. Brown, Va. Military Land, note.....	10 00	
	“ “ interest.....	10	
	M. C. & L. C. Damarin, Va. Mil. Land, notes.....	339 73	
	“ “ notes.....	22 37	
	Pres't W. Q. Scott, house rent, Jan. and Feb.....	70 00	
			442 20
17	James Holton, Va. Military Land, note.....	11 10	
	“ “ interest.....	18 90	
	E. S. VanMeter, “ notes.....	42 25	
	“ “ interest.....	7 25	
	M. H. Newman, “ interest.....	50	
	J. B. McGrew, “ notes (2).....	60 00	
	“ “ interest.....	2 90	
	S. A. Bond, “ interest.....	15 00	
			157 90
April 31	State treasury, interest on endowment.....		3,000 00
12	Mary J. & J. A. Reed, Va. Mil. Land, note.....	40 75	
	“ “ interest.....	4 25	
	Leroy Moss, “ note.....	10 00	
	“ “ interest.....	1 23	
	Wm. Wykoff, “ interest.....	20 00	
	J. F. Miles, “ notes (3).....	331 20	
	J. W. Purdin, “ note.....	200 00	
	“ “ interest.....	27 20	
	S. C. Derby, house rent, for March.....	20 00	
			654 63
27	E. Tucker, Va. Military Land, note.....	29 62	
	“ “ interest.....	3 68	
	R. H. Justice, “ interest.....	10 00	
	A. M. Green, “ note.....	20 00	
	John H. Davis, “ note.....	6 33	
	“ “ interest.....	67	
			70 30
May 2	John Williams, “ notes.....	40 00	
	Alfred Kisting, “ note.....	42 50	
	“ “ interest.....	6 90	
			89 40

## STATEMENT IV—Continued.

Date.	From whom received, and on what account.	Amount.	Totals.
1882.			
May 2	Jacob Butler, Va. Military Land, note.....	\$19 88	
	"    "    "    interest.....	5 12	
	S. C. Derby, house rent, for April ...	20 00	
			\$45 00
6	N. S. Townshend, house rent, one year ...	300 00	
	W. Q. Scott, house rent, March and April.....	70 00	
	Henry Oursler, Va. Military Land, notes (8).....	305 29	
	"    "    "    interest.....	93 39	
	Wm. Watkins,    "    "    notes (3).....	72 50	
	"    "    "    interest.....	12 25	
			853 43
18	State treasury, interest on endowment.....		3,000 00
22	J. F. Miles, Va. Military Land, notes (5) .....	447 31	
	"    "    "    interest.....	103 69	
	R. W. McFarland (Bursar) spring-term bills—		
	Incidentals.....	\$1,158 00	
	Chem. Laboratory fees.....	210 00	
	Physical    "    .....	63 00	
	Stall-rent .....	4 00	
		14 35	
			1,986 00
June 10	S. C. Derby, house rent, for May..	20 00	
	Michael Hause, Va. Military Land, note .....	32 36	
	"    "    "    interest.....	17 64	
	Lafayette Brown,    "    "    sale .....	7 85	
	Isaac Sole,    "    "    notes (4).....	168 92	
	John Williams,    "    "    note, bal.....	7 46	
	"    "    "    interest.....	12 19	
	John Liston,    "    "    note.....	10 00	
			276 42
17	J. F. Miles,    "    "    note.....	390 39	
	"    "    "    interest.....	88 29	
	W. H. Newman,    "    "    notes (2).....	62 50	
	"    "    "    interest.....	5 95	
	W. S. Hall,    "    "    notes (2).....	52 00	
	"    "    "    interest.....	3 12	
			602 25
22	Isaac G. Noel,    "    "    note .....	20 00	
	Chsa. A. Barton,    "    "    sales .....	742 27	
	S. C. Derby, house rent, June.....	20 00	
			782 27
June 26	S. A. Norton, apparatus sold to students .....	\$198 35	
29	W. Q. Scott, rent for May and June .....	70 00	
29	Johnson Allen, Va. Military Land, note.....	35 33	
	"    "    "    interest.....	6 35	
	Bettie Allen,    "    "    note.....	13 50	
	"    "    "    interest.....	1 62	
			\$325 15
Aug. 30	State Treasury, income on endowment.....		5,000 00
5	Alfred McDaniel, Va. Military Land, notes.....	\$74 80	
	"    "    "    interest .....	7 97	
			82 77
Sept. 18	H. M. Kinsely,    "    "    notes (4) ...	\$92 66	
	"    "    "    interest .....	14 09	
	Lawrence C. Moon,    "    "    note .....	51 00	
	Robert Bryant,    "    "    note .....	54 00	
	Jas. W. Hall,    "    "    note .....	38 84	
	"    "    "    interest .....	1 49	
			252 08

## STATEMENT IV.—Continued.

Date.	From whom received, and on what account.	Amount.	Total.
1882.			
Sept. 23	Salome Cross, Va. Military Land, note (bal.)..	\$4 80	
	“ “ “ interest .....	7 70	
	M. C. & L. C. Damarin, “ notes (13)...	646 26	
	“ “ “ interest .....	62 88	
			\$721 64
Oct. 28	State Treasury, income on endowment.....		4,000 00
Oct. 2	Daniel Brown, Va. Military Land, notes (4).....	\$78 67	
	“ “ “ interest.....	15 33	
	J. F. Miles, “ “ note.....	103 90	
	“ “ “ interest.....	14 60	
	John Williams, “ “ note.....	70 00	
	“ “ “ interest.....	10 62	
			293 12
7	John Liston, “ “ notes (bal.) ...	\$31 75	
	“ “ “ interest.....	22 98	
	Rob't G. Smeltzer, “ “ notes (2).....	42 00	
	“ “ “ interest.....	8 00	
			104 73
Oct. 11	Hiram Cooper, “ “ note.....	\$12 62	
	“ “ “ interest.....	7 38	
	J. F. Miles, “ “ note.. ..	103 90	
	“ “ “ interest.....	14 90	
			138 80
31	M. D. Hibbs, “ “ note (part).....	\$32 95	
	“ “ “ interest (on 4) ..	47 05	
	James Copeland, “ “ notes (2) .....	33 30	
	“ “ “ interest .. ..	4 95	
	Robert Smith, “ “ note.....	31 00	
	“ “ “ interest .....	5 90	
	David Evans, “ “ note.....	16 00	
	“ “ “ interest.....	4 24	
	J. Q. Winterstein, “ “ notes (2).....	52 00	
	“ “ “ interest.....	26 00	
	(The last two notes paid by re-sale of the land).		253 39
	State Treasury, income on endowment.....		4,660 40
Npv. 4	R. W. McFarland, Bursar, fall term bills, viz. :		
	From Incidental fees.....	\$1,652 50	
	“ Chem. Lab'y fees .....	265 00	
	“ Phys. “ “ .....	147 00	
	“ stall rent.... ..	18 50	
		\$2,083 00	
	Walter Quincy Scott, house rent to Nov. 1.....	70 00	
	S. C. Derby, “ “ .....	80 00	
			2,233 00
10	G. C. & Jona. Tener, Va. Military Land, notes .....	\$124 80	
	“ “ “ interest...	31 20	
			156 00
11	State Treasury, appro'n for expenses of trustees..		350 00
	Total receipts, including balance of \$4,062.35		
	on hand November 16, 1881.....		\$50,030 78
	Total disbursements for the year (see state-		
	ment V. for details).....		45,517 37
	Balance, being amount of cash on hand		
	November 15, 1882 .....		\$4,513 41

## STATEMENT V.

A DETAILED ACCOUNT OF DISBURSEMENTS, BY HENRY S. BABBITT, TREASURER, DURING  
THE FISCAL YEAR ENDING NOVEMBER 15, 1882.

Date.	No. of Order.	To whom paid.	For what purpose.	Amount.
1881.				
Nov.	902	S. H. Ellis.....	Expenses of Trustees.....	\$13 85
	903	T. J. Godfrey .....	" .....	16 30
	904	J. B. Jamison.....	" .....	15 50
17	905	F. Koenig.....	P'tng. rooms dept. physics..	67 50
	906	T. S. & J. S. Negus.....	Chronometer .....	400 00
18	907	Robt. Johnson.....	Kalsomining, &c .....	62 00
23	908	Jno. T. Short.....	Salary for November.....	180 00
	909	Albert H. Tuttle.....	" .....	225 00
	910	Alice Williams.....	Salary \$80 (back sal. \$30)...	110 00
	911	Walter Q. Scott.....	Salary .....	275 00
	912	Edward Orton.....	" .....	225 00
	913	Sidney A. Norton.....	" .....	225 00
	914	N. S. Townshend.....	" .....	225 00
	915	R. W. McFarland .....	" .....	225 00
	916	S. W. Robinson .....	" .....	225 00
	917	T. C. Mendenhall.....	" .....	225 00
	918	N. W. Lord.....	" .....	100 00
	919	S. C. Derby.....	" .....	160 00
	920	W. R. Lazenby.....	" .....	200 00
	921	George Ruhlen.....	" .....	50 00
	922	Wm. A. Mason, Jr .....	" .....	120 00
	923	Michael Dillon.....	" .....	83 33
25	924	J. Porter Milligan.....	Services Prest. and Clerk...	15 00
Dec. 5	925	George Rhoades.....	Care of lawn for Nov .....	32 75
	926	The Greenwood Mach. Co.	Mechanical Department....	1 56
	927	Kilbourne, Jones & Co.....	" .....	5 20
	928	S. W. Robinson.....	" .....	4 65
	929	J. H. Barcus.....	Phys. Dept. supplies.....	1 25
	930	Stitt, Price & Co .....	Lime for gas, &c.....	9 70
	931	George Bell. ....	Constructing cistern.....	22 50
	932	Western Home Journal....	Advertising .....	7 75
	933	Akins & Hampson .....	Dormitory stove.....	14 90
	934	S. A. Norton .....	Chemical Department.....	3 65
	935	Edward Orton .....	Freights paid .....	24 00
	936	Same.....	Fossils.....	10 00
	937	Columbus Cabinet Co.....	Museum tables.....	46 00
	938	F. C. Ashinger.....	Carpentry .....	5 31
	939	John K. McDonald.....	Plastering .....	8 50
	940	Wassall Fire Clay Co.....	Pipe .....	1 20
	941	A. Carlisle.....	Lumber .....	11 75
	942	Jacob Schneider .....	Bricks.....	20 65
	943	Forest City Chemical Wks.	Varnish .....	6 66
	944	City Boiler Works.....	Materials and labor .....	4 10
	945	C. S. Amy.....	Carpenter.....	15 55
	946	Wm. Halley .....	Cistern pump.....	20 00
	947	S. A. Norton .....	Chemicals .....	500 00
7	948	L. B. Wing .....	Expenses Trustees .....	18 75
	949	N. S. Townshend.....	Farm work.....	85 89
	950	Barsch & Lomb Optical Co.	Objectives.....	31 50
	951	Halm, Bellows & Butler....	Desk for Prof. Tuttle.....	40 50
	952	R. Jones & Son.....	Instr'm'ts for Prof. Tuttle ...	33 85
	953	A. E. Angier.....	Preservg. fld. " .....	15 75



STATEMENT V.—Continued.

Date.	No. of Order.	To whom paid.	For what purpose.	Amount.
1881.				
Dec. 7	954	A. H. Tuttle .....	Microphones.....	25 30
8	955	James B. Jamison.....	Expenses Trustees.....	14 75
15	956	Albert Allen.....	Salary to date.....	100 00
20	957	David O'Brien .....	Asst. in Chem. Lab.....	60 00
21	958	S. A. Norton.....	Salary for December.....	225 00
	959	J. P. Milligan.....	Services in Presidts. room ..	10 00
	960	W. Q. Scott.....	Salary for December.....	275 00
	961	Edward Orton.....	" .....	225 00
	962	N. H. Townshend.....	" .....	225 00
	963	R. W. McFarland .....	" .....	225 00
	964	A. H. Tuttle.....	" .....	225 00
	965	S. W. Robinson .....	" .....	225 00
	966	T. C. Mendenhall.....	" .....	225 00
	967	N. W. Lord.....	" .....	100 00
	968	Jno. T. Short.....	" .....	180 00
	969	S. C. Derby.....	" .....	160 00
	970	W. R. Lazenby.....	" .....	200 00
	971	George Ruhlen .....	" .....	50 00
	972	Wm. A. Mason, Jr .....	" .....	120 00
	973	Alice Williams.....	" .....	80 00
	974	Michael Dillon.....	" .....	83 33
	975	C. C. Miller .....	Asst in Latin and Greek.....	40 00
	976	Belle Swickard.....	" .....	40 00
22	977	Minnie O. Scott.....	" .....	5 00
26	978	A. D. Rodgers, P. M .....	Postage.....	58 96
31	979	H. S. Babbitt, Treasurer....	Salary to date.....	50 00
	980	George Rhoades .....	Lawn keeper.....	33 37
1882.				
Jan. 14	981	Siebert & Lilley.....	Warrant and Record books	13 25
	982	Albert Allen.....	Express and telegraph .....	4 10
	983	T. C Mendenhall .....	Express charges.....	2 95
	984	J. B. Jamison.....	Ackdgt. of deeds V.M. lands	2 00
	985	Columbus Transfer Co.....	Freights.....	5 94
	986	Kauffman, Latimer & Rising	Phys. Dept.....	2 39
	987	Lyonsdale Coal Co.....	151 <sup>3</sup> / <sub>10</sub> tons coal.....	360 09
	988	A. H. Smythe.....	Book for library.....	1 80
	989	M. C. Lilley & Co .....	Swords and equipments .....	101 75
	990	Jas. W. Queen & Co.....	Apparatus, \$91.60; and supplies, \$72.04, Dept. Physics.	163 64
	991	Kilbourne, Jones & Co.....	Paint brush, .....	95
	992	J. M. Stewart. ....	5 carriages for State Offls....	\$10 00
	993	E. R. Kirk.....	Work in Dept. Physics .....	30 00
5	994	Jos. Berger.....	Sand for gas house.....	4 20
	995	Peter Emmel.....	Paintg. in Mechl. Lab .....	4 13
	996	S. H. Ellis.....	Expenses Trustees.....	15 75
6	997	J. B. Jamison.....	" .....	16 50
12	998	Midland Telephone Co.....	Rent to April. ....	25 00
13	999	A. D. Rodgers, P. M.....	Postage for Pres. Scott.....	12 86
	1000	J. H. Anderson, Trustee....	Exp. to Yellow Springs.....	10 00
New Series.				
20	1	George Ruhlen .....	Reprs. etc., Ordnance Prop..	43 48

## STATEMENT V—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1882.				
Jan. 25	2	Walter Quincy Scott.....	Salary for January.....	\$275 00
	3	Edward Orton.....	".....	225 00
	4	S. A. Norton.....	".....	225 00
	5	N. S. Townshend.....	".....	225 00
	6	R. W. McFarland.....	".....	225 00
	7	A. H. Tuttle.....	".....	225 00
	8	S. W. Robinson.....	".....	225 00
	9	T. C. Mendenhall.....	".....	225 00
	10	John T. Short.....	".....	180 00
	11	N. W. Lord.....	".....	100 00
	12	Samuel C. Derby.....	".....	160 00
	13	W. R. Lazenby.....	".....	200 00
	14	Geo. Ruhlen.....	".....	50 00
	15	Wm. A. Mason, Jr.....	".....	120 00
	16	E. D. Marsh & Co.....	National Atlas.....	13 50
	17	Alice Williams.....	Salary for January.....	80 00
	18	M. Dillon.....	".....	83 33
26	19	T. J. Hand, Sec'y.....	Vol. 8 A. J. C. C. Reg.....	3 75
28	20	A. D. Rodgers, P. M.....	Postage for catalogue.....	16 48
Feb'y 1	21	George Rhoades.....	Lawn-keeper for January.....	32 66
7	22	F. Koenig.....	Kalsomining Phys. dep't.....	6 00
	23	L. B. Wing.....	Expense Trustees.....	15 85
	24	Kelley & Co.....	Plumbing (ordy. repairs).....	125 60
	25	F. C. Ashinger.....	Labor.....	6 00
	26	J. K. McDonald.....	Plastering.....	9 75
	27	Walter Q. Scott.....	Rep. to house.....	21 62
	28	N. S. Townshend.....	Expenses lecture course.....	27 20
	29	".....	Exp. Farmers' Institutes.....	40 95
	30	John T. Short.....	".....	6 70
	31	Fauth & Co.....	Chromograph.....	329 75
	32	Edward Orton.....	Exp. Farmers' Institutes.....	35 05
	33	Wm. R. Lazenby.....	".....	42 70
	34	N. W. Lord.....	".....	22 65
	35	C. S. Amy.....	Work in Mech. dep't.....	7 40
	36	A. H. Tuttle.....	Physiological supplies.....	13 67
	37	Bausch & Lomb.....	Two microscopes.....	50 00
	38	Abbott, Stoner & Horn.....	Hardware, ordinary repa.....	27 24
	39	T. C. Mendenhall.....	Department supplies.....	21 60
	40	S. P. Watt.....	Map frames.....	4 00
	41	Nevis & Myers.....	Letter-heads.....	19 50
	42	Greenwood Machine Co.....	Pulley castings Mech. dep't.....	1 40
	43	W. R. Lazenby.....	Department supplies.....	10 85
	44	J. & H. Berge.....	" (Mining).....	63 17
	45	City Boiler Works.....	Iron scraps.....	1 35
	46	Patton Manufacturing Co.....	Potter's clay.....	90
	47	Asa Gray.....	Flora Brasiliensis.....	22 00
	48	Kelley & Co.....	G. s. fittings.....	2 35
	49	R. W. McFarland.....	Gate of gates.....	11 00
	50	A. E. Foote.....	N. Y. State Agri. reports.....	20 00
	51	John Reynolds & Co.....	Agricultural dep't supplies.....	32 25
	52	Albert Allen.....	Express charges.....	3 10
	53	Daily Times.....	Advertising.....	6 15
	54	Col. Transfer Co.....	Freights.....	3 58
	55	E. R. Kirk.....	Carpenter work.....	80 00
15	56	Belle Swickard.....	Ass't Librarian.....	37 50

## STATEMENT V—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1882. Feb'y 22	57	Wm. A. Mason, Jr.....	Salary for February.....	\$120 00
	58	W. Q. Scott.....	" .....	275 00
	59	Edward Orton .....	" .....	225 00
	60	S. A. Norton.....	" .....	225 00
	61	N. S. Townshend.....	" .....	225 00
	62	R. W. McFarland.....	" .....	225 00
	63	A. H. Tuttle.....	" .....	225 00
	64	S. W. Robinson.....	" .....	225 00
	65	T. C. Mendenhall.....	" .....	225 00
	66	N. W. Lord.....	" .....	100 00
	67	John T. Short.....	" .....	180 00
	68	Samuel C. Derby.....	" .....	160 00
	69	W. R. Lazenby.....	" .....	200 00
	70	Geo. Ruhlen.....	" .....	50 00
	71	Alice Williams... ..	" .....	80 00
	72	M. Dillon.....	" .....	83 33
	73	Albert Allen.....	Salary to February 15.....	200 00
March 1	74	Geo. Rhoades.....	Lawn-keeper.. ..	26 87
9	75	S. H. Ellis.....	Expense Trustees.. ..	23 15
	76	J. B. Jamison.....	" .....	17 40
10	77	E. J. Estep.....	Notarial fees .....	4 40
	78	Nevins & Myers.....	Record books.....	7 25
	79	C. V. N. Beach. ....	Labor.....	4 50
	80	S. A. Norton.....	Attending Institutes, exps..	5 00
	81	W. Q. Scott.....	" .....	16 45
	82	A. H. Tuttle.....	Attending institutes.....	9 95
	83	T. C. Mendenhall.....	" .....	32 28
	84	W. U. Telegraph Co.....	Telegrams .....	1 35
	85	S. A. Norton.....	Books for library .....	39 21
	86	Siebert & Lilley.....	Binding books.....	3 00
	87	Strobridge Lithog'ing Co..	Letter-heads & envelopes..	46 00
	88	A. H. Smythe.....	Books for library.....	112 87
	89	Col. Transfer Co.....	Freights .....	8 74
	90	J. W. Queen.....	Supplie for Physiog. dep't..	25 75
	91	C. S. Amy.....	Repairs Art dep't.....	4 53
	92	Wm. A. Mason, Jr.....	Supplies " .....	28 16
	93	Kaiser & Bro.....	Repairing roof and gutter..	96 21
	94	Einer & Amend.....	Chemicals.....	192 51
16	95	Wood & Graham.....	Insurance on barn.....	25 00
17	96	Albert Allen, Sec'y.....	Salary to 15th inst.....	100 00
22	97	Walter Q. Scott.....	Salary for March.....	275 00
	98	Edward Orton.....	" .....	225 00
	99	S. A. Norton.....	" .....	225 00
	100	N. S. Townshend.....	" .....	225 00
	101	R. W. McFarland.....	" .....	225 00
	102	A. H. Tuttle.....	" .....	225 00
	103	S. W. Robinson.....	" .....	225 00
	104	T. C. Mendenhall.....	" .....	225 00
	105	N. W. Lord.....	" .....	100 00
	106	John T. Short.....	" .....	180 00
	107	S. C. Derby .....	" .....	160 00
	108	W. R. Lazenby.....	" .....	200 00
	109	Geo. Ruhlen.....	" .....	50 00
	110	Wm. A. Mason, Jr.....	" .....	120 00
	111	Alice Williams.....	" .....	80 00

## STATEMENT V—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1882.				
March 22	112	M. Dillon .....	Salary for March .....	\$83 33
27	113	D. O'Brien .....	Ass't in chem. laboratory...	45 00
29	114	C. C. Miller .....	Ass't in languages .....	35 00
30	115	J. P. Milligan.....	President's clerk.....	25 00
April 1	116	Geo. Rhoades .....	Lawn keeper, March .....	32 18
7	117	Columbus Transfer Co.....	Freights .....	16 14
	118	F. C. Ashinger .....	Labor.....	6 10
	119	A. H. Tuttle.....	Material for dissection .....	12 25
	120	Kauffmann, Lattimer & Rising .....	Supplies for physical lab'y.	8 30
	121	Hayden & Baker .....	Iron for dep't supplies .....	8 92
	122	R. & J. Beck.....	Supplies for zool. dep't.....	13 00
	123	Abbott, Stoner & Horn.....	Shovel and spade.....	1 75
	124	P. Hayden & Co.....	Coal for mechanical dep't..	5 00
	125	R. W. McFarland.....	Care of gates, 3 months .....	10 00
	126	Nevins & Myers .....	Book paper.....	6 50
	127	J. M. & W. Westwater .....	Supplies mechanical dep't..	16 75
	128	Wm. Halley.....	Repairs to Pres't's house...	9 95
	129	Edward Orton.....	Exp. attend. Farmers' Inst.	13 67
	130	Osborn & Co.....	Supplies zoological dep't...	15 37
	131	Lyonsdale Coal Co.....	72 $\frac{1}{8}$ $\frac{3}{8}$ tons coal .....	194 36
	132	Carlisle & Co.....	Furniture for hort'l dep't ..	71 10
	133	Kilbourne, Jones & Co.....	Supplies physical dep't .....	2 23
	134	J. P. Milligan .....	Postage President's room...	16 40
	135	Midland Telephone Co.....	Rent to July .....	25 00
	136	George Rhoades.....	Lawn work .....	16 33
18	137	S. H. Ellis.....	Trustees' expenses.....	12 35
	138	J. B. Jamison .....	" .....	19 95
20	139	H. Bancroft, agent.....	Insur. on dormitories .....	60 00
21	140	Belle Swickard .....	Ass't in languages .....	30 00
	141	Minnie O. Scott.....	" .....	15 00
26	142	Walter Q. Scott.....	Salary for April .....	275 00
	143	M. Dillon .....	" .....	83 33
	144	Jno. T. Short .....	" .....	180 00
	145	Edward Orton.....	" .....	225 00
	146	S. A. Norton .....	" .....	225 00
	147	N. S. Townshend .....	" .....	225 00
	148	R. W. McFarland.....	" .....	225 00
	149	A. H. Tuttle.....	" .....	225 00
	150	S. W. Robinson.....	" .....	225 00
	151	T. C. Mendenhall.....	" .....	225 00
	152	N. W. Lord .....	" .....	100 00
	153	Samuel C. Derby .....	" .....	160 00
	154	W. R. Lazenby .....	" .....	200 00
	155	George Ruhlen.....	" .....	50 00
	156	W. A. Mason, Jr.....	" .....	120 00
	157	Alice Williams .....	" .....	80 00
	158	Albert Allen .....	Salary to April 15.....	100 00
	159	Van Harlingen & White ..	Insurance .....	23 00
May 3	160	S. H. Ellis.....	Trustee expenses.....	11 30
	161	Alston Ellis .....	" .....	17 00
6	162	Royce & Pulling .....	Arms for wind mill.....	2 90
	163	T. C. Mendenhall.....	Muslin for screens.....	5 42
	164	S. C. Derby.....	Repairs to blackboard .....	4 69
	165	A. W. Livingstone's Sons ..	Grass seeds .....	9 40
	166	J. M. Wright.....	Hours' work.....	3 30

## STATEMENT V—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1882.				
May 6	167	Midland Telephone Co .....	Physical laboratory line ...	\$25 00
	168	Gardner Bros.....	Gas retorts.....	53 75
	169	W. Q. Scott.....	Map and freight.....	7 18
	170	B. Westerman & Co.....	Books for library .....	8 28
	171	Jas. W. Queen & Co.....	Lantern for dep't history...	45 00
26	172	M. Dillon .....	Salary for May.....	83 33
	173	Jno. T. Short .....	" .....	180 00
	174	R. W. McFarland.....	" .....	225 00
	175	W. Q. Scott.....	" .....	275 00
	176	Edward Orton.....	" .....	225 00
	177	S. A. Norton.....	" .....	225 00
	178	N. S. Townshend .....	" .....	225 00
	179	A. H. Tuttle.....	" .....	225 00
	180	S. W. Robinson.....	" .....	225 00
	181	T. C. Mendenhall .....	" .....	225 00
	182	N. W. Lord.....	" .....	100 00
	183	S. C. Derby .....	" .....	160 00
	184	W. R. Lazenby .....	" .....	200 00
	185	George Ruhlen.....	" .....	50 00
	186	Wm. A. Mason, Jr.....	" .....	120 00
	187	Alice Williams .....	" .....	80 00
	188	W. R. Lazenby .....	Supplies for hort'l dep't....	300 00
29	189	S. M. Shedd, agent.....	Insurance on farm house...	8 00
	190	Henry S. Babbitt, Tress.. {	4½ mos. salary to 15th.....	150 00
	191	David O'Brien.....	Postage and rev. stamps ...	8 50
June 8	192	T. J. Godfrey.....	Ass't in chemical laborat'y	45 00
	193	J. B. Jamison .....	Expense Trustees.....	22 15
9	194	E. J. Estep .....	" .....	14 00
	195	J. P. Milligan.....	Acknowledging deeds.. ....	4 80
	196	W. C. Mills.....	Portage for President .....	7 00
	197	R. W. McFarland.....	Hours' work .....	3 50
	198	James Kelley .....	Care of gates .....	10 25
	199	George Rhoades.....	Lawn keeper.....	31 60
	200	G. M. Maris & Co.....	Carpenter work .....	17 50
	201	Nevins & Myers .....	Supplies for mech'l lab....	19 73
	202	Ohio State Journal Co .....	Paper and print'g for Pres't	29 00
	203	T. C. Mendenhall.....	Note circulars .....	3 50
	204	Farhart Printing Co .....	Lab'y supplies .....	13 45
	205	N. S. Townshend .....	Bill-heads.....	6 75
	206	E. M. Van Harlingen, Jr...	Institute expenses.....	25 40
	207	G. Drobisch.....	Advertising in Makio .....	15 00
	208	Kauffman, Lattimer & R...	Plants .....	6 30
	209	W. A. Hershiser.....	Alcohol.....	10 44
	210	Columbus Transfer Co .....	Lumber.....	15 72
	211	Siebert & Lilley .....	Freight and drayage.....	8 46
	212	W. Q. Scott .....	Blank books .....	17 15
	213	N. E. Lovejoy .....	Exs. visiting institutes .....	47 15
	214	Abbott, Stoner & Horn.....	Fence posts .....	21 00
	215	C. L. Needles.....	Barbed iron wire.....	43 50
15	216	Albert Allen .....	Work on wire fence .....	9 00
17	217	Belle Swickard .....	Salary to date .....	200 00
	218	R. W. McFarland.....	Salary as librarian, etc .....	67 50
	219	W. Q. Scott.....	Salary for June.....	225 00
	220	Edward Orton .....	" .....	275 00
			" .....	225 00

## STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1882.				
June 17	221	S. A. Norton .....	Salary for June.....	\$225 00
	222	N. S. Townshend .....	" .....	225 00
	223	A. H. Tuttle.....	" .....	225 00
	224	S. W. Robinson.....	" .....	225 00
	225	T. C. Mendenhall.....	" .....	225 00
	226	N. W. Lord .....	" .....	100 00
	227	J. F. Short.....	" .....	180 00
	228	S. C. Derby .....	" .....	160 00
	229	W. R. Lazenby .....	" .....	200 00
	230	George Ruhlen .....	" .....	50 00
	231	W. A. Mason, Jr .....	" .....	120 00
	232	Alice Williams .....	" .....	80 00
19	233	M. Dillon .....	" .....	83 38
	234	F. C. Ashinger .....	Carpenter work ..	6 90
20	235	J. P. Milligan .....	Ass't President's office.....	25 00
	236	C. C. Miller .....	Assistant n Greek .....	25 00
21	237	S. H. Ellis .....	Trustees expenses .....	25 70
	238	T. J. Godfrey.....	" .....	15 50
	239	C. A. Barton, agt. Va. M. L.	{ 8 months' salary... \$390 00 Expenses 292 94	682 94
	240	R. W. McFarland.....	Bursar and Sup't lawn w'k.	50 00
	241	Jas. B. Jamison.....	Expenses trustees.....	27 20
26	242	S. A. Norton .....	Supplies chem. laboratory..	56 24
July 8	243	C. L. Needles.....	Whitewashing.....	22 40
	244	James Kelley .....	Lawn-keeper.....	35 00
	245	L. B. Wing.....	Expenses trustees.....	23 25
	246	Midland Telephone Co.....	Rent to Oct. 1 .....	25 00
	247	George Rhoades .....	— days' work .....	87 00
	248	Columbus Transfer Co.....	Hacks and horses.....	25 00
	249	Windsor Atcheson, estate..	Bricks .....	10 62
	250	This order null and void...	.....	.....
	251	Abbott, Stoner & Horn .....	Hardware.....	18 92
	252	S. P. Watts.....	Mounting map .....	1 50
	253	J. M. Stuart .....	Carriage hire .....	12 00
	254	C. S. Amy .....	Work in library .....	4 00
	255	R. W. McFarland .....	Filling diplomas, etc.....	10 00
	256	Stitt, Price & Co. ....	Lime .....	1 87
	257	B. Westermann & Co .....	Books and atlas .....	12 00
	258	W. A. Mason, Jr .....	Artdep't supplies. ....	7 45
	259	W. Q. Scott.....	Postage .....	87 00
	260	Aston & Huff.....	Collecting boxes.....	4 25
	261	W. R. Lazenby.....	Institute expenses.....	9 95
	262	E. R. Kirk .....	Repairing gate .....	8 25
	263	C. M. Cott & Co .....	Printing circulars.....	8 75
	264	A. H. Smythe .....	Books.....	16 56
	265	W. S. Devol .....	Work in hort'l department	15 00
	266	Earhart Printing Co .....	Printing .....	19 25
	267	Strobridge Lith. Co.....	Diplomas .....	10 00
	268	C. A. Barton, agt .....	Refunded to Hackworth for Va. M. Land .....	71 18
	269	Lyonsdale Coal Co .....	721 1/2 tons coal .....	173 82
	270	L. B. Wing.....	Expenses trustees .....	6 00
Aug. 2	271	James B. Jamison ..	" .....	14 00
	272	Alston Ellis .....	" .....	16 00
	273	T. J. Godfrey.....	" .....	18 00

STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1882.				
Aug. 11	274	L. D. Myers, P.M.....	Postage for President.....	\$21 00
12	275	M. Dillon .....	Salary for July .....	83 38
	276	J. W. Queen & Co.....	Induction coil.....	125 00
15	277	Albert Allen .....	Salary to date .....	100 00
21	278	H. F. Booth .....	Wagon for hort'l dep't.....	150 00
22	279	L. D. Myers, P.M.....	Postage for Sec'y .....	15 00
23	280	A. S. White & Co., agts.....	Insurance.....	36 11
31	281	S. H. Ellis.....	Expenses trustees .....	13 45
	282	L. B. Wing.....	" .....	5 00
Sept. 1	283	T. J. Godfrey.....	" .....	16 00
	284	J. B. Jamison.....	" .....	19 00
	285	Ohio State Journal Co .....	Printing circulars.....	56 50
	286	Myers Bros .....	Printing .....	4 00
	287	Columbus Nursery .....	Evergreens.....	5 00
	288	George W. Gleason.....	Geological works .....	9 00
	289	Rob't Clarke & Co.....	"Coal and Iron Industries"	11 20
	290	Columbus Transfer Co .....	Hauling.....	3 25
	291	Kelley & Co.....	Gas fitting.....	3 85
	292	Bresnahan & Shea.....	Janitor's supplies.....	83 52
	293	Robert Wood.....	1st est. frame dwell'g house	498 69
	294	" .....	" 2 brick residences..	437 40
	295	P. Hayden & Son.....	Castings.....	17 22
	296	C. Kemmerer .....	Brick and sand .....	18 44
	297	James Kelley.....	Days' work.....	33 25
	298	Col. Brass & Steam Pipe wks	Crank and pipe.....	42 18
	299	G. J. Brand & Co.....	Directory .....	3 00
	300	Police Commissioners.....	Services of police.....	10 00
	301	Albert Allen.....	Express and telegrams .....	1 65
	302	Tolelo Blade Co.....	Adver. contracts.....	7 50
	303	Enquirer Co.....	" .....	7 50
	304	Orebaugh & Brodbeck .....	" .....	4 00
	305	Myers & Brickell.....	" .....	5 00
	306	Legal Record.....	" .....	5 00
4	307	M. Dillon .....	Salary for August.....	83 38
	308	Robert Wood.....	{ Estimate No. 2 on frame } house..... \$450 00 Est. No. 2 on 2 brick houses 1,559 97 }	2,009 97
	309	John Hazelbaker.....	Refunded for V. M. Lands	93 72
19	310	James Kelley .....	Days' work.....	47 85
22	311	John T. Short .....	Salary for September.....	225 00
	312	W. Q. Scott.....	" .....	275 00
	313	Albert Allen .....	Salary to 15th inst.....	200 00
	314	Sidney A. Norton.....	Salary for September.....	225 00
	315	N. S. Townshend .....	" .....	225 00
	316	R. W. McFarland.....	" .....	225 00
	317	S. W. Robinson.....	" .....	225 00
	318	T. C. Mendenhall.....	" .....	225 00
	319	N. W. Lord .....	" .....	100 00
	320	S. C. Derby .....	" .....	225 00
	321	W. R. Lazenby.....	" .....	200 00
	322	George Ruhlen.....	" .....	50 00
	323	Wm. A. Mason .....	" .....	140 00
	324	Alice Williams.....	" .....	80 00
25	325	Leader Printing Co.....	Adv. proposals for houses..	5 91
26	326	S. M. Shedd, agent.....	Insurance .....	65 00



## STATEMENT V—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1882.				
Sept. 30	327	Robert Wood.....	Est. No. 3 on 1 frame and 2 brick houses.....	\$1,557 45
	328	M. Dillon .....	Salary for September.....	83 88
Oct. 4	329	L. B. Wing.....	Expenses trustees.....	5 50
	330	A. H. Smythe .....	Stationery .....	4 75
	331	W. Halley .....	Repairs to pump, etc.....	9 80
	332	E. B. Armstrong.....	5 stoves for dormitory .....	54 20
	333	Halm, Bellows & Co.....	Table for President.....	40 00
	334	Columbus Cabinet Co.....	5 wardrobes for dormitory .....	65 00
	335	Ohio State Journal Co.....	Circulars .....	5 00
	336	Midland Telephone Co.....	Rent to January 1, 1883.....	25 00
	337	Columbus Transfer Co.....	Drayages.....	1 80
	338	Earhart Printing Co.....	Certificates.....	5 85
	339	N. S. Townshend .....	Expenses to Iowa .....	84 75
	340	Henry Richter.....	Cases for flags .....	65 00
	341	Strobridge & Co.....	Envelopes .....	5 50
14	342	David O'Brine.....	Ass't in Chemistry.....	30 00
16	343	A. Gardner, jr.....	Ins. contents main building	59 87
	344	J. W. Lauterback.....	" "	21 88
	345	Wood & Graham .....	" "	21 38
	346	S. M. Shedd.....	" "	64 16
	347	H. Bancroft .....	" "	64 16
24	348	Robert Wood, contractor {	Est. No. 4 on 1 frame, \$360 } 2 brick residences, \$967.50 }	1,327 50
25	349	W. Q. Scott.....	Salary for October .....	275 00
	350	S. A. Norton .....	" .....	245 00
	351	N. S. Townshend ..	" .....	225 00
	352	R. W. McFarland.....	" .....	225 00
	353	S. W. Robinson.....	" .....	225 00
	354	T. C. Mendenhall.....	" .....	225 00
	355	N. W. Lord.....	" .....	100 00
	356	John T. Short .....	" .....	225 00
	357	S. C. Derby.....	" .....	225 00
	358	W. R. Lazenby.....	" .....	200 00
	359	George Ruhlen.....	" .....	50 00
	360	Wm. A. Mason.....	" .....	140 00
	361	Alice Williams .....	" .....	80 00
	362	M. Dillon, janitor.....	" .....	83 83
	363	Columbus Bolt Works .....	.....	60
	364	Albert Allen Sec'y .....	Salary to October 15.....	100 00
Nov. 3	365	W. H. Miller.....	Teacher in Phys. Geog'y ..	25 00
4	366	Robert Wood, contractor...	Est. No. 5 on frame resid'ces	504 00
14	367	Albert Allen, Sec'y.....	Salary to November 16.....	100 00
15	368	Henry S. Babbitt, Treas. {	6 mos. salary to date \$200 } Postage stamps..... 3 }	208 00
	369	W. R. Lazenby .....	Appr'n for Horticul. Dept..	250 00
	370	Minnie E. Bird.....	Ass't Librarian.....	25 00
		Total disbursements .....	.....	\$45,517 87



## ANNUAL REPORT.

Total receipts as per statement IV.....	\$50,080 78
Total disbursements as above.....	45,517 87

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Balance of cash in my hands November 15, 1882.....	\$4,513 41
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HENRY S. RABBITT,  
*Treasurer Ohio State University.*

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REPORT OF THE FINANCE COMMITTEE.

COLUMBUS, OHIO, *November 16, 1882.*

*To the Board of Trustees of the Ohio State University:*

We, your Committee on Finance, having this day examined the accounts and vouchers of the Treasurer, and compared them with the records in the possession of the Secretary, do hereby certify that the report of said Treasurer is correct, and that the statements therein contained, truthfully exhibit the condition of the finances of the University for the fiscal year ending November 15, 1882.

Respectfully submitted.

T. J. GODFREY,  
ALSTON ELLIS,  
S. H. ELLIS,  
*Finance Committee.*

## LIST OF EMPLOYES AND COMPENSATION.

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Section 7 of the organic act, passed by the Legislature of Ohio, May 1, 1878, requires a list of "the number of professors, officers, teachers and other employes, and the position and compensation of each," to be reported annually.

The following is the list, with salaries attached, at this date :

Walter Q. Scott, President.. .. .	\$2,750
Edward Orton,      Professor.....	2,250
S. A. Norton,      " .....	2,250
Norton S. Townshend, " .....	2,250
R. W. McFarland,      " .....	2,250
Albert H. Tuttle,      " .....	2,250
S. W. Robinson,      " .....	2,250
T. C. Mendenhall,      " .....	2,250
Nat. W. Lord,      " (conditional) .....	2,000
John T. Short,      " .....	2,250
S. C. Derby,      " .....	2,250
Wm. R. Lazenby,      " .....	2,000
George Ruhlen,      " (military) .....	500
Wm. A. Mason, Assistant Professor.....	1,400
Alice Williams, Instructor.....	800
Albert Allen, Secretary.....	1,500
Henry S. Babbitt, Treasurer .....	400
Minnie E. Bird, Assistant Librarian.....	125
Jas. P. Milligan, Clerk to President.....	75
F. H. Eldridge, Assistant Professor of Physics.....	200
M. Suzerki. Assistant in Physics.....	100
C. C. Green, Instructor in Zoology—fall term... ..	100
Horace L. Wilgus, Instructor in Physiology—fall term.....	150
Prof. A. C. Hirst,      "      Latin—fall term .....	150
Geo. W. McCoard,      "      Algebra      " .....	800
A. D. Selby,      "      Physical Geography—fall term.....	50
W. H. Miller,      "      " .....	50
M. Dillon, Janitor .....	1,000

APPROPRIATIONS.

SECRETARY'S OFFICE, COLUMBUS, O., Nov. 13, 1882.

*Dr. Henry S. Babbitt, Treasurer O. S. University :*

DEAR SIR: The following minor appropriations were made by the Board of Trustees for the fiscal year, 1882, in addition to the appropriation by the General Assembly, as per act of February 13, 1882 (\$33,320.80), for the expenditure of the income from the Endowment Fund, for the support and maintenance of the University, to wit:

November 11, 1881.—	Farmers' Institutes.....	\$150 00
"	Military Department .....	61 88
"	Assistant Teachers, Dep't Latin and Greek.....	275 00
"	Industrial Art Dep't supplies.....	40 00
"	Department of Zoölogy.....	175 00
"	" Agriculture (not to exceed).....	150 00
"	" Horticulture .....	200 00
"	Mining Department supplies.....	413 40
January 3, 1882.—	Department of Physics.....	200 00
"	Fitting up room for Department of Physics.....	100 00
March 9,	Department History (Oil Lantern).....	45 00
"	Horticultural Department equipment .....	550 00
"	" " current expenses.....	400 00
April 17,	Chemical Department supplies.....	500 00
June 20,	Books for President's Department.....	100 00
"	" Prof. Derby's " .....	200 00
"	" Library .....	300 00
"	Supplies for Chemical Department .....	400 00
"	Induction coils.....	125 00
August 1,	For advertising.....	200 00
Total .....		\$4,585 28

# FARM DEPARTMENT.

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## REPORT OF FARM COMMITTEE.

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*Hon. Jas. B. Jamison, President :*

The Farm Committee beg to state that they have examined the reports of the Professors of Agriculture and of Horticulture ; and their accounts and vouchers are found correct:

The Board of Trustees has never filled the place of the farm Superintendent, vacated in 1880 by Mr. Thorne, and this committee recommend that Mr. William Brotherton, of Greene county, be offered the place at a salary of six hundred dollars per year. We believe it would be an advantage to the institution if only distinct types of purely bred domestic animals were raised upon the farm, and to this end we ask an appropriation from the general fund that will enable the Farm Committee to keep up the Jersey herd to its present standard, and to add a small number of thorough-bred Short-horn cattle, and other animals of the best sorts, and that the Ohio State University farm be made a source of supply to those who may wish to procure reliable cattle, sheep and swine of approved sorts for breeding purposes. We believe this would, in time, afford a revenue not inferior to the present method. It would advance the interests of live-stock breeders, and bring the University into prominent notice throughout the State. Especially would it furnish the best means of instruction to the students of agriculture in the University. This we believe to be a point of crowning importance. The farm should not be required to be especially a money-making concern, but at all times it should be considered one of the educational appliances of the University. Live stock, feeding, dairying, management of manures, tillage, drainage, grafting, care of fruits, vines and fruit-trees, should each be managed to some extent in an experimental way, making *instruction for students* the primary object.

In other departments chemicals are bought and *wasted*, if you please, to instruct the student. Iron and timber are purchased, and in laboratory and work-shop are broken, twisted, crushed by expensive apparatus, and thrown aside—not to make money, but to teach the student the scientific principles involved and the strength of material.

We respectfully suggest, as the wants of the students in agriculture increase, that the farm be brought under requisition to a reasonable extent, and that the sound principle recognized in other departments be applied to this.

LUCIUS B. WING, *Chairman*,  
S. H. ELLIS,  
J. B. JAMISON.

STATEMENT "A,"  
SHOWING WHAT WAS ON HAND AT BEGINNING AND END OF YEAR, WITH PURCHASES, SALES, PRODUCTION AND CONSUMPTION, ETC.

ITEMS.	On hand Nov. 1, 1881.		Bought or expended during the year.		Produced or increased in value.			Consumed or decreased in value.		Sold during the year.		On hand Nov. 1, 1882.	
	Number or amount.	Value.	Number or amount.	Value.	Acres.	Number or amount.	Value.	Number or amount.	Value.	Number or amount.	Value.	Number or amount.	Value.
Horses .....	10	\$955 00					\$35 00			2	\$70 00	8	\$920 00
Hogs .....			3	\$60 00			165 00			2	20 00	23	205 00
Cattle .....	50	2,952 00	8	400 00			574 50						2,851 00
Implements.....		2,166 00		410 00		15							2,516 20
Corn .....	1,400 bus.	700 00											840 60
Wheat .....			3/4 bu.	1 50	31	1,600 bus.	960 00	1,542 3/4 bus.	925 65	57 1/4 bus.	49 63	1,400 bus.	
Oats.....	40 bus.	20 00	177 1/2 bus.	190 35	45	1,061 "	1,379 17			1,173 1/2 "	1,502 87	65 "	65 00
Rye—seed 1881.....	21 1/2 bus.	15 35	1 1/2 "	2 62		50 "	25 00	96 1/2 bus.	47 62				
Beets.....	1,500 bus.	150 00	2 lbs. seed	1 00	1 1/2	1,000 bus.	200 00	21 1/2 "	15 35				
Hay.....	90 tons.	900 00	14 tons.	88 00	30	40 tons.	400 00	1,405 "	140 50	96 bus.	9 50	1,000 bus.	200 00
Millet.....			1 bu. seed		3 1/2	12 "	96 00	67 4-5 tons.	678 00	22 1-5 tons.	297 45	54 tons.	496 00
Corn-fodder .....	560 shks.	112 00				700 shks.	140 00	1 bu. seed.	3 00			12 "	96 00
Straw .....	80 tons.	100 00				70 tons.	280 00	560 shks.	112 00			700 shks.	140 00
Potatoes .....						70 tons.	280 00	19 1/2 tons.	46 51	10 1/2 tons.	53 49	70 tons.	280 00
Feed .....			24 3/4 bus.	41 80	1	218 bus.	164 98	24 3/4 bus.	41 80	203 bus.	154 48	15 bus.	10 50
Milk .....				335 16					335 16				
Clover and grass seed.....	6 bus.	27 00	13 bus.	25 25		9,341 gals.	2,241 92			2,341 gals.	2,241 92		
Miscellaneous produce.....		36 00		157 53		6 bus.	24 00	19 bus.	52 25			6 bus.	24 00
Labor, total.....				3,402 94			167 80		10 00				27 38
Billst .....				709 80					3,057 49				
Totals.....		\$8,133 35		\$5,870 41	112		\$6,853 37		\$6,224 63		\$6,018 14		\$8,673 04

(†). This includes material for permanent improvements and experimentation.

## REPORT OF FARM MANAGER.

COLUMBUS, November 11, 1882.

*S. B. Wing, Esq., Chairman of Farm Committee:*

DEAR SIR: I herewith submit the Annual Report of the Farm Department of the Ohio State University for the year ending October 31, 1882.

The tabular statement on page 124 presents a view of transactions and results for the year.

The cash receipts of the farm for the year just ended, as shown in the foregoing statement, were \$6,018.14. The amount of produce was greatly reduced this year by the transfers made to the Horticultural department. One hundred and twelve acres have been under cultivation; the remainder was in pasture. The sales of farm products for the year amounted to \$1,454.47; this is shown by deducting expenditures for stock, seed, feed and produce re-sold from column five of the general statement.

The excess of production above the value of produce consumed, as shown in columns three and four, is \$625.74, which is the net earnings of the farm for the year. This sum has been expended in the purchase of stock, in permanent improvements, and in experimental work.

## THE DAIRY.

The sales from the dairy amounted to \$2,241.92. Almost the whole work of the dairy has been performed by students. The following statement will show the financial results:

## STATEMENT B.

*Dairy Department of Ohio State University, Dr.*

To cost of milking and care.....	\$820 61
To new milk wagon, etc.....	180 66
For use of horse.....	60 00
Purchase of stock.....	50 69
Keeping twenty-six cows twelve months to balance.....	1,393 46
	<hr/>
	\$2,505 42

*Cr.*

By sales of milk.....	\$2,241 92
seven calves sold .....	34 50
growth of nine calves.....	63 00
manure of twenty-six cows, at \$6 each.....	156 00
old milk wagon.....	10 00
	<hr/>
	\$2,505 42

The above balance gives \$53.59½ to pay for the feed of each cow after deducting cost of care.

CASH ACCOUNT.

The cash account of the farm, as shown by accompanying vouchers, is as follows:

*Superintendent to Farm Department, Dr.*

To cash receipts from all sources..... \$6,018 14

*Cr.*

By cash of ordinary labor.....	\$1,914 79
cash of student labor .....	1,488 15
cash increase of inventory .....	870 00
improvements, experiments and expenses .....	1,597 47
cash on hand .....	147 73
	<hr/>
	\$6,018 14

IMPROVEMENTS.

The permanent improvements made during the year are as follows: New spouting upon the barn and upon the farm house; a new force pump in the stock well at barn; a pipe from pump to small pasture and to horse stable; a hose attachment to the pump for the purpose of washing out the dairy stable; also, six Bernard cattle stanchions in the dairy stable, which give satisfaction.

Twenty rods of 3-inch tile were laid across the north-east corner of field number six, north of the college. Two 3-inch tile drains, together amounting to forty-five rods, were cut through the marsh on the south side of the farm; also, a tile drain of fifteen rods in field number two. A 6-inch tile drain, ninety-four rods in length, has been laid from college sewer to run south of the barn.

The rip rap begun last year upon the river bank has been completed; the river frontage has been greatly improved. This work is still in progress.

The walk from the dormitory to High street, along Woodward avenue, has been graveled, and the shade-trees which died last year on the sides of these streets have been replaced.

Some clearing has been done upon the north island, and the land cleared was plowed and planted with corn; the fences of the farm have also been repaired and improved.

A comfortable kitchen has been built to the tenant-house on the north side of the farm. The cost of this, as well as of repairs upon the farm-house, were paid from the fund for general repairs, as will be noticed under the proper head.

VARIETIES OF WHEAT.

Forty-five varieties of wheat were sown last fall, upon a piece of bottom land, a repetition of tests of the previous year. Owing to severe frosts in the spring, and the wet weather in the early part of the summer, the test was, in many particulars, unsatisfactory. Comparing the average yields per acre of the bearded red, the smooth red, bearded white and smooth white, the result was as follows:

Bearded red, average of 13 varieties, per acre .....	25 $\frac{1}{2}$ bu.
Bearded white, average of 2 varieties, per acre .....	23 $\frac{1}{2}$ bu.
Smooth red, average of 15 varieties, per acre .....	23 $\frac{1}{2}$ bu.
Smooth white, average of 15 varieties, per acre.....	24 bu.
Total average yield of 45 varieties, per acre .....	23 $\frac{2}{3}$ bu.

The weight of the same per bushel was as follows:

Bearded red, average weight per bushel, 13 var.....	59 $\frac{1}{2}$ lbs.
Bearded white, average weight per bushel, 2 var .....	59 $\frac{1}{2}$ lbs.
Smooth red, average weight per bushel, 15 var .....	58 $\frac{1}{2}$ lbs.
Smooth white, average weight per bushel, 15 var.....	59 $\frac{1}{2}$ lbs.

	Name of variety	Grain—bush.	Weight of gr. per bucl'n'd for seed.	Smooth or bearded.	Color.	Size.
1	Velvet Chaff.....	27	64 $\frac{1}{2}$	B	R	B
2	Rice .....	27	58	B	R	m
3	White Blue Stem.....	22 $\frac{1}{2}$	57 $\frac{1}{2}$	B	R	s
4	American White .....	21	59 $\frac{1}{2}$	S	W	l
5	Tappahannock .....	24	63	S	W	s
6	Fultz .....	19 $\frac{1}{2}$	61	S	R	m
7	Scott Bearded.....	25 $\frac{1}{2}$	61	B	R	m
8	York White Chaff.....	21	61	S	W	l
9	Golden Straw .....	19 $\frac{1}{2}$	62	S	W	m
10	Russian May .....	28 $\frac{1}{2}$	62 $\frac{1}{2}$	S	R	l
11	Silver Chaff.....	28 $\frac{1}{2}$	62 $\frac{1}{2}$	S	W	m
12	Russian No. 2.....	30	62	S	W	s
13	Rickenbrode.....	10 $\frac{1}{2}$	59 $\frac{1}{2}$	S	W	m
14	Heighes' Prolific.....	21	59	S	R	s
15	Bennett .....	28 $\frac{1}{2}$	62	S	R	m
16	Mammoth Red.....	27	60	S	R	l
17	White Glass.....	27	58	S	W	m
18	Champion Amber.....	21	58	S	W	m
19	Grecian.....	24	59 $\frac{1}{2}$	S	W	s
20	Mediterranean .....	27	59 $\frac{1}{2}$	B	R	l
21	Smith's Improved .....	21	60	B	W	m
22	Siberian .....	15	56	S	R	s
23	Yellow Missouri .....	16 $\frac{1}{2}$	57	S	R	s
24	Washington Glass.....	27	56	S	W	s
25	New Zealand .....	27	56	S	W	m
26	Red Amber.....	22 $\frac{1}{2}$	59 $\frac{1}{2}$	B	R	m
27	German Amber.....	21	57	S	R	l
28	Lancaster .....	27	60	B	R	s
29	Travis .....	28 $\frac{1}{2}$	60	B	R	m
30	Treadwell.....	25 $\frac{1}{2}$	59	B	W	l
31	Indiana Swamp .....	27	58	B	R	s
32	Michigan Amber .....	24	59	B	R	m
33	McGhee's Red .....	25 $\frac{1}{2}$	58	S	R	l
34	Therr.....	16 $\frac{1}{2}$	59	B	R	s
35	Smith Scott .....	22 $\frac{1}{2}$	57 $\frac{1}{2}$	S	R	m
36	Hungarian.....	28 $\frac{1}{2}$	59 $\frac{1}{2}$	B	R	l
37	Arnold's Gold Medal .....	27	56	S	W	m
38	Clawson .....	27	57	S	W	m
39	Yellow Blue Stem .....	21	60	S	R	s
40	Egyptian .....	27	59 $\frac{1}{2}$	B	R	m
41	Zimmerman.....	30	58 $\frac{1}{2}$	S	R	l
42	White Eldorado.....	21	58	S	W	m
43	Finley .....	22 $\frac{1}{2}$	58 $\frac{1}{2}$	S	R	m
44	California Blue Stem .....	24	59	B	R	s
45	Sandomirka.....	28 $\frac{1}{2}$	63	S	W	m



Experiments were also made with wheat to determine the comparative advantage of thick and thin, early and late sowing, and upon drained and undrained land, but owing to the peculiar season, results were unsatisfactory.

Plots were staked off in the spring for the purpose of testing the effect of different quantities of gypsum upon the clover and orchard grass. Owing to the fact that one of the largest fields was transferred to the use of the new Experiment Station this clover field was needed this fall for wheat. No definite results could be obtained; the beneficial effect of the gypsum was, however, quite marked.

About the middle of June corn and potatoes were planted upon a piece of drained marsh on the south side of the farm. The piece was divided into plats, and different amounts of lime were applied to each. The dry weather commenced immediately after this planting, and neither corn nor potatoes came to maturity.

Three varieties of oats were received last spring from the Agricultural Department at Washington. These were marked Washington, New Brunswick and Russian White; a small quantity of Purple Hulless barley was also received. The oats were sown side by side; the New Brunswick rusted badly; the Washington and Russian White were but little affected by rust, the latter was, however, much later in ripening. The purple barley was sown at the same time and yielded at the rate of 35 bushels per acre of very plump, heavy grain.

A plot of Lucern, of two years' standing, was so much injured by the frosts about the 10th of April last, while white and red clover growing near were not affected, that the conclusion appeared to be justified that this plant cannot be relied upon for a crop in Ohio.

The varieties of corn planted upon the farm were Yellow Leaning and American White; both ripened perfectly, and appear to be reliable and excellent varieties.

The experimental work commenced for next year consists of a series of 30 plots of wheat in the north-west field, treated with different fertilizers. Thirty-five varieties are also sown as nearly as possible under the same conditions for the purpose of testing again their relative merits.

N. S. TOWNSHEND,  
*Superintendent of Farm.*

## DEPARTMENT OF BOTANY AND HORTICULTURE.

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*Hon. L. B. Wing, Chairman Farm Committee Ohio State University :*

DEAR SIR: I transmit herewith the first annual report of the Department of Practical Horticulture, covering the operations of the years 1881-82.

### ORGANIZATION.

At the very beginning of the past college year, efforts were made to effect a definite and distinctive organization of this important division of the new Department of Botany and Horticulture. In a brief preliminary report or prospectus addressed to the President of the University, I made the following suggestions, which will serve to indicate the basis of the present organization :

1. "That the Department of Botany and Horticulture be entirely separate and distinct from the Department of Agriculture. This is absolutely essential to success. Several years of experience in each of these departments, together with pains-taking study and observation of the history of similar departments in different institutions, have fully convinced me of this. I would, therefore, respectfully suggest that at as early a date as practicable an equable division of land, teams, implements, etc., be made, and that each department thereafter keep its own accounts and manage its own affairs independently. This is the only way by which the two departments can work together with satisfaction to themselves or credit to the University.

2. I would recommend that the plat of land lying between the main University building and the President's house—which is now enclosed and not considered as a part of the campus—be devoted to an experimental garden and nursery.

3. That hereafter the experimental fruit garden be devoted to fruit *alone*, and that no attempt be made to raise vegetables or grain therein.

4. That a portion of the campus in the vicinity of the "lake" be devoted to a botanic garden.

In my judgment, the most essential requisites of success in this department are well-managed fruit and vegetable gardens, a small, but well-stocked nursery of fruit, forest and ornamental trees and plants, and a good botanic garden. Without them the practical operations of Horticulture cannot be illustrated or made familiar.

Aside from their use as a means of instruction, why should not most of the trees, shrubs, and flowers needed to beautify and adorn the grounds be furnished by this department, rather than purchased elsewhere?

The University grounds already contain a fine collection of trees and shrubs, but we should have a genuine arboretum, where *all* varieties that will live in this climate could be found correctly labeled, so that their habits of growth, and value as timber or ornamental plants, could be seen and noted."

The above suggestions embrace at least five distinct divisions, each being a necessary and important means of illustrating the practical operations of the different branches of Horticulture and Botany. These are as follows:

(1). *A Vegetable Garden*—For illustrating the subjects of “vegetable culture” and “seed-growing.”

(2). *A Fruit Garden*—For illustrating “fruit culture.”

(3). *A Nursery*—For illustrating the propagation of various fruit, forest and ornamental trees, and for supplying the plants needed in the fruit, vegetable and botanic gardens.

(4). *A Botanic Garden and Arboretum*—For illustrating the general subject of systematic and economic Botany, and practical arboriculture.

(5). *Experiment Grounds*—For making such tests and conducting such experiments as could not well be attempted elsewhere.

#### PREPARATORY WORK.

Inasmuch as this scheme appeared to meet the approval of the Board of Trustees, steps were at once taken to carry it into effect. The land selected for the vegetable garden and experiment grounds was cleared of the crops with which it was partially occupied, some additional draining was done, after which the whole plat was deeply and thoroughly plowed—a portion of it being sub-soiled. In the fruit garden such work, in the way of pruning, cultivation, winter protection, etc., as was needful and could best be done in the fall, was attended to. For the nursery, collections of forest and fruit-tree seeds were made for early spring planting.

The progress made in the different divisions of our work will be briefly treated under their appropriate heads.

#### VEGETABLE GARDEN.

The past year has not been an altogether favorable one for gardening. The spring was the earliest we have had for years, and the transition from an unusually mild winter was easy and gradual. About the middle of February our well-drained soil was smoking with fermentation, and the fervid warmth of the sun pushed forward the germination of all self-sown seeds, and awoke swarms of insects into life. But the warm weather of the latter half of February and early March was followed by severe and long-protracted rains, accompanied by cold winds and more or less frost, which proved very inhospitable to all early garden crops, and was particularly injurious to our early-blooming fruit plants.

#### HOT-BEDS AND COLD FRAMES.

Early in March a few hot-bed frames were put in place, on the slope just south of the farm-house. In these were sown different varieties of lettuce, cabbage, tomatoes, egg-plant, peppers and other seeds, and in spite of the cold weather that followed, furnished us with a good supply of plants of these important garden vegetables. Celery seed of different varieties was sown in carefully prepared cold-frames.

## EARLY CROPS.

A little later we had sown in the open ground numerous varieties each of early peas, beets, parsnips, carrots, salsify, spinach, parsley, radishes and onions. We also planted a dozen or more different varieties of early potatoes. Just the proper time for sowing or planting the above named seeds cannot, of course, be exactly stated. It can be laid down as a general rule, however, that the seeds of all hardy, vigorous plants may be safely sown just as soon as the land is fit to work in spring.

Our practice with these early crops is as follows: The preparatory tillage is thorough and as nearly a perfect seed-bed is formed as is possible. The seeds are sown in drills, and not broad-cast, and are always sown upon a freshly stirred surface. As regards the proper quantity of seed, no definite rules can be given.

As a general thing we seed too thickly, and would reap better results if we should prepare the land better, fertilize it more liberally, and use less seed. At our first and earliest sowings we use a third more seed than is required later. We sow all of our seed in drills or rows, the distance apart varying according to the variety, and the depth depending upon the condition of the soil as to dryness and the size of the seed. When the soil is cold and moist we are liable to err in covering the seed too deeply. When seed had to be sown by hand, the broad-cast system had some recommendation, but it contains many radical defects, and since the introduction of our seed-drills is rarely practiced. The drill system is certainly the more preferable. The distribution and covering of the seed is more equal and perfect, and the subsequent cultivation can be easier and better performed.

## LATER CROPS.

Among the later crops were numerous varieties of cabbage, tomatoes, egg-plant, peppers, which we had started in the hot-bed. After transplanting these, we planted eight varieties of sweet-corn, sixteen of beans, and a lesser number of squashes, melons, cucumbers, turnips, etc.

The early peas were followed by cucumbers for pickling, the spinach by late cabbage, and the early potatoes by turnips and celery, making upon so much of the ground two crops in the season.

## THOROUGH CULTURE.

In the management of these crops the most economical and effective means of culture known were adopted. Two important principles were kept constantly in view, viz.: (1). To never exceed, if possible, the limit of profitable labor. (2). To have a garden absolutely free of weeds. I had a firm belief in clean culture, and determined to act out that belief. At first it was plain sailing. A careful and thorough preparation of the ground, together with good seed and a favorable season, insured a rapid and nearly perfect germination. For the first few weeks, as row after row of vegetation appeared, showing no sign of "plants out of place," I fancied that our ideal of a "clean garden" was one of easy attainment. But I was sadly mistaken. A little later the enemy was upon us. For weeks we had one long-continued, soaking, drizzling rain, with scarcely a ray of sunshine. Then it was that the weeds came. They came in almost every variety and in countless numbers. For a time it

seemed as though each crop was in a fair way to be overwhelmed. Persistent labor, however, is sure to tell, and by keeping the horse-cultivator and hand-hoe steadily at work, we soon made decided headway against our formidable intruders. In fact, we conquered the weeds, and, with few exceptions, had fairly good crops. The value of thorough cultivation was made so abundantly manifest that few could fail to observe it, and heed the lesson thus taught.

#### THE FRUIT GARDEN.

The extreme severity of the winter of 1880-81, followed as it was by an equally severe and long-protracted summer drouth, left the fruit garden in a bad condition. Over sixty per cent. of the apple-trees were killed outright, while some of the pears and many of the small fruit-plants suffered a similar fate. Most of these losses were made good by replanting last spring, and the list of varieties was considerably increased.

I sent to New York for the greater part of the apple-trees, thinking that a selection from stock raised in a higher latitude might prove more hardy. At all events, it will be interesting to compare the growth, fruitfulness, etc., of the same varieties of apple-trees grown in Western New York and at Columbus, Ohio. The short experience that I have had in practical fruit culture here in Central Ohio is not reassuring. It shows that our capricious climate is more unfavorable, even to hardy fruits, than that of corresponding or higher latitudes in other states. I do not wish to discourage the cultivation of fine fruit, and would like to see every country home have a small but well-selected orchard and fruit-garden for its own use. Yet, excepting a few favored localities, our best fruits cannot be raised throughout Central Ohio with anything like the success and profit that follows the cultivation of wheat or corn. Fine fruit *can* be grown here at the University, but not with profit or satisfaction, for the soil is not congenial, and the climate is unfavorable.

Of the large fruits we have in our garden, over twenty varieties of the apple, sixteen of pear, nine of cherries, and a small collection of plums, peaches and quinces. The vineyard is small and bore but little fruit the past season. We are preparing for its extension next spring.

Of the small fruits we have some of the best varieties of the strawberry, raspberry, blackberry, currant and gooseberry. I wish to test every variety of these small fruits that merits attention.

#### OBJECT OF THE GARDENS.

The primary object of the fruit and vegetable garden is instruction. That is, the varieties tested, the methods of propagation, training, pruning, etc., that are employed are just so many means of illustration for the benefit of students. Thus far we have been occupied mainly with pioneer work. We have been trying to make gardens rather than manage them. Time and effort have been spent in the way of permanent improvements. Stumps and stones have been removed, drains laid, and roads built. We have been enriching the soil and killing weeds. Owing to our limited capital we have had to labor to disadvantage, yet the results of the year's work show substantial progress and improvement.

## STUDENT LABOR.

Another object accomplished by the gardens is, the opportunity they afford students for doing something in the way of self-support. Many of our students find it necessary to earn money in order to defray, at least, a portion of their expenses. During the spring term quite a large number were engaged at different times, and in various ways, and several worked more or less steadily throughout the whole season. I am happy to state, that with few exceptions, the work was done faithfully and well. There is certainly no feeling opposed to manual labor. It is counted honorable and the student who joins the labor corps suffers thereby no disrespect. As the condition of the department improves—when there is less pioneer work to do, and the educational features have become more fully developed, the student can scarcely fail to take a livelier interest in the manual work offered by the gardens.

## THE NURSERY.

No special argument is needed in support of the proposition that a well conducted nursery is an important and necessary adjunct to the Department of Botany and Horticulture. The practical operations of horticulture can be made familiar in no other way, and any useful system of experimentation requires that we have constantly on hand a good supply of seedling plants and young fruit, forest and ornamental trees. As a step in this direction we have raised the past season quite a collection of seedling fruit and forest-trees. Another year we hope to greatly enlarge and extend this important branch of our work. Recognizing the subject of forest-tree culture as one of vital interest to the people of this State, we should certainly do all in our power to illustrate how cheaply and easily many of our most valuable timber trees may be raised from seed. The varied nature of the University grounds offers locations suitable for extensive and valuable experiments in forestry, and they should be inaugurated just as soon as possible.

## BOTANIC GARDEN AND ARBORETUM.

It is my wish to make of the whole University campus a grand botanic garden and arboretum. That is, we should have somewhere upon the University grounds every variety of tree, shrub and hardy herbaceous perennial that will grow in our climate. This work is already begun, and I trust that means may be furnished to carry it on rapidly toward completion. The hardier varieties, at least, could now be well cared for, and by keeping in mind what is to follow they could be so arranged and disposed as to combine ornamental effect with scientific classification. It is eminently desirable that the University campus should not only be attractive from a purely ornamental point of view, but be made to serve a useful purpose as a means of instruction in the Department of Botany and Horticulture.

## FLOWERS.

Our flower-beds, although limited in number and extent, were thoroughly made. The poor, sandy, gravelly soil was removed to a depth of two and one-half feet, and its place filled with rich loam, woods-dirt and manure. With the aid of my students

in Floriculture I laid out last spring nine beds varying somewhat in shape and size. The largest of these beds was made in the lawn just south-east of the main building. It was planted in the ribbon style, and stocked with ricinus, cannas, caladiums, geraniums, coleus, centaurea and pyrethrum. The other beds were made near the building bordering upon its front. Two of them were massed with verbenas; one with fancy caladiums; one with different varieties of tea-roses; one with a selection of geraniums; one was devoted to pansies; one to achyranthes, alternanthera, and centaurea; and one contained a miscellaneous collection. These small flower-beds looked well throughout the whole season, and added much to the attractiveness of the grounds.

#### THE LAWN.

This was mowed three times during the season, and has been kept as neat as was possible with the help and implements at command. Although fairly well seeded, the lawn is, for the most part, in a bad condition. The surface has never been properly leveled, or the soil properly drained and enriched. If this were done and the grass kept closely cut with a one-horse lawn-mower, and the most exposed places top-dressed with well decomposed stable manure every fall, we might have one of the finest lawns in the country. The general appearance of the campus would be greatly improved by removing several old, partially dead and decaying apple-trees. It would likewise be rendered more attractive by making some tasty, comfortable rustic seats and locating them in suitable places.

#### EXPERIMENT GROUNDS.

For the purpose of making comparative lists of the different varieties of grains, grasses and vegetables, etc., and in order to have specimens for study and samples to select for the museum, a considerable portion of the vegetable garden was taken and divided into small plots. Here we planted over eighty varieties of winter wheat, over forty of grasses and other forage plants, besides other vegetable products too numerous to mention. This proved to be one of the most interesting and instructive divisions of our work, and was closely watched by the students. With the aid of the means appropriated to the State Experiment Station, we were enabled to make many careful observations, and to conduct quite an elaborate series of experiments upon the various crops thus planted. Besides a mere comparison of varieties, we have tested different methods of culture, and various systems of pruning—experimented with fertilizers and numerous insect remedies. We have also done considerable in the way of hybridizing, crossing, and trying to improve varieties by careful selection.

The results of these experiments will be given in full in a soon to be published report of the experiment station. The following circular was prepared at the beginning of the year and quite widely distributed:

"It is the aim of those having in charge the management of the Farm and Gardens connected with the Ohio State University, to make them more distinctively experimental in the future than they have been in the past. The object being not only to give better facilities for instruction to students at the University, but to promote the interests of Agriculture and Horticulture generally throughout the State



"It is our desire to extend to farmers, fruit-culturists, gardeners, and others, useful information and instruction in any and all practicable ways. To this end correspondence is respectfully invited. Communications on agricultural and horticultural subjects are always welcomed. All questions will be fairly considered, and, as far as possible, promptly answered.

"Detailed reports of experiments, carefully and conscientiously made, will aid us in our work.

"Seeds that are suspected of being unsound or adulterated, will be carefully examined and tested. Weeds and other plants will be identified and named. New varieties of grains, grasses, fruits, vegetables, and flowers, will be gladly received, and their merits thoroughly tried and reported."

In response to this I have received quite a number of new varieties of fruits, grains, and vegetables, whose merits are now being carefully tested. I could wish that this practice of sending new varieties to the University might become more general.

#### THE OHIO EXPERIMENT STATION.

This station was established in accordance with an act of the General Assembly, approved April 17, 1882, "for the benefit of the interests of practical and scientific Agriculture, and for the development of the best agricultural resources of the State." Very wisely the Board of Control, to whom was committed the location and general management of the station, located it at the State University, where the work is now being carried on upon the following conditions, viz.:

(1) The station has been given the free use of a field of seventeen acres lying south of the University Campus, which is already plotted, and will soon be devoted wholly to experimental purposes.

(2) The station has the privilege of conducting such experiments upon the University farm, and in the fruit and vegetable gardens, as may be mutually agreed upon by the Board of Control and the Professors in charge of the same.

(3) The station has been granted the free use of a team and such implements and tools belonging to the University as is needful in the execution of its work.

(4) The station agrees to turn over to the University, for the use of team, implements, etc., all products raised, except what is needed for seed, museum purposes, and the like.

(5) The station is given rooms in the Agricultural Chemistry department of the new Chemical Laboratory for storing samples of seed, fertilizers etc.; for making weights, conducting experiments in germination, and work of a similar character.

The Board of Control of the station also agrees to pay a fair proportion, according to the work done, of the salary of a competent Agricultural Chemist, who may be employed by the University to teach this important branch of Chemistry.

#### ADDITIONAL EQUIPMENT.

I have already, in my report to the President of the University, urged the need of a green-house and laboratory to enable me to do better work in Botany and Horticulture. We need it also as an adjunct to the gardens, nursery, and experiment grounds. Nothing could add more to the usefulness of our practical work than a good propagating house. It is an essential requisite to success.



Again, we sadly need a small building for use as a stable and tool-room for the Horticultural department. This building should contain a small office, a room for threshing and cleaning small quantities of seed, for the storage of fruit-boxes, crates, etc. It should also have a frost-proof root cellar. Such a structure should be conveniently located, and could be built at a very moderate cost.

Another want is a complete assortment of pruning, grafting and budding implements.

#### EXPENDITURES AND RECEIPTS.

I submit with this report a summary of the receipts, expenses, and inventory of the department. From this it will be seen that it has not been a great burden to the treasury of the University. Regarding instruction and education as the primary object of my labors, I have made no attempt to do a commercial business, and the success of the department cannot be estimated in dollars and cents. Commencing the year without any equipment whatever, with no propagating houses or suitable implements, except what we could borrow or hire, the gardens have paid as well financially as any reasonable person could expect or wisely desire.

#### OUTSIDE WORK.

During the year I attended and took part in eight Farmers' Institutes, held in different parts of the State. I also attended, during the winter vacation, the annual meetings of the Ohio, Indiana and New York State Horticultural societies, beside several county society meetings. In the spring I attended the National Forestry Congress at Cincinnati, and during the summer vacation visited the different State Experiment Stations, the State Universities of Michigan, New York and New Jersey, besides attending the meeting of the American Association for the Advancement of Science at Montreal. In this way I not only formed many valued acquaintances, but gained many new ideas, which can scarcely fail to be of signal use in my present work. I endeavor to improve every opportunity to meet our farmers and fruit-growers. I wish to make their acquaintance, to keep in sympathy with them and to get them interested in our work at the University. I know that effort in this direction results in good, and I am glad to undertake it whenever I can leave without neglecting my regular University duties. Besides this work my correspondence makes great demands upon my time. I have many letters to answer, containing inquiries about fruits, flowers, vegetables, weeds, insects, fertilizers, etc., etc.

All such questions are fairly considered, and, as far as possible, promptly answered. If any have failed to receive the attention they deserve, it was simply because I could not command time to attend to them.

#### ACKNOWLEDGMENTS.

I wish to express thanks to the many friends who have contributed to the efficiency of the Department by donations of seed, museum specimens, implements, etc. Everything received has been fully appreciated, although scant acknowledgments have too often been made.

I cannot close this report without expressing my gratification at the harmony and good-will that has existed between this and the other departments of the University.

We have borrowed from each other, and worked and counseled together all with the utmost good feeling. If there exists any lack of confidence, I am not aware of it, for I cannot now recall a single unfriendly or ungenerous act.

Respectfully submitted.

WM. R. LAZENBY,  
*Professor of Botany and Horticulture.*

*Ohio State University, November 14, 1882.*

Statement of the aggregated receipts and expenditures of the Horticultural Department of the Ohio State University for the year ending November 10, 1882 :

RECEIPTS.

Cash received for appropriation.....	\$700 00
Cash received for products sold.....	476 47
Total.....	<u>\$1,176 47</u>

EXPENDITURES.

Labor of Foreman and Farm Department.....	\$353 40
Labor of students.....	211 71
Team, wagon, implements, tools, etc.....	454 35
Fruit-trees, seeds, flowers, etc.....	119 67
Total.....	<u>\$1,139 13</u>
Total receipts.....	\$1,176 47
Total expenditures.....	<u>1,139 13</u>
Balance on hand.....	\$37 34

WM. R. LAZENBY.

# RECORD OF PROCEEDINGS

## OF THE BOARD OF TRUSTEES OF OHIO STATE UNIVERSITY.

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COLUMBUS, OHIO, *November* 10, 1881.

Trustees met at 10 o'clock A.M.

Present - Messrs. Anderson, S. H. Ellis, Godfrey, Jamison and Wing.

The minutes of the previous meeting were read and approved.

The Executive Committee presented the report of their proceedings since the June meeting of the Board.

The Farm Committee made a verval report touching the present condition of affairs, and asked time to present a formal report.

The report of the Board was presented and read by the Secretary.

The reports of the President, and other members of the Faculty, to the Board, were presented and read by President Scott.

On motion, the reports were received and referred to the President of the University, and to the Secretary of the Board to revise, and arrange for publication, and presentation to the Governor.

Permission was granted to Dr. Townshend to attend the Wool-growers' Convention in New York during the latter part of November.

Letters were read from Hume & Williams, of Butler county, concerning the discovery of a small tract of land in Brown county, and the Secretary was instructed to inform them that one-third the net proceeds would be allowed for the discovery, after said land had been surveyed, appraised and sold. S. H. Ellis was appointed a committee of one to take charge of the matter, with full power to act for the Board.

The following resolution was offered, viz.:

*Resolved*, That the resolutions passed January 5, 1881, concerning a daily assemblage of the students of the University, are hereby re-affirmed, and, that in addition thereto, the Board hereby recommends the reading of the Scriptures (without comment) and prayers, at the discretion of the President of the University, as part of said exercises. The yeas and nays being called for, the resolution was adopted by five yeas and no nays.

A recess of the Board was taken until 1 o'clock P.M.

On re-assembling, Mr. C. E. Thorn appeared before the Board and presented his report as farm manager, which was referred to the Farm Committee to report back the next day.

Capt. C. A. Barton presented the report of his agency in the management of the Virginia Military Lands, whereupon the Secretary was instructed to pay his salary to November 1, 1881, and expenses as per bill presented, by drawing his warrant on the Treasurer.

On motion of Mr. Godfrey, it was

*Resolved*, That Captain Barton's settlement with John Colin is hereby approved, and the Treasurer of this Board is requested to surrender to said Colin the note now held for about \$11.00, and that said Barton is authorized to settle with George W. Hackworth and William Hackworth concerning loss in lines of lands, on the best terms possible.

H. S. Babbitt presented his report as Treasurer, which, after reading, was referred to the Committee on Finance to audit and report during the session of the Board.

*Ordered*, That the income of the Endowment Fund (so-called) held in trust by the State, and all income from whatever source not otherwise specifically appropriated, be, and is hereby appropriated for the maintenance and support of the University for the ensuing fiscal year, and for such other purposes, incident thereto, as the Board of Trustees may, from time to time, determine; provided, that the use of the income (\$20,547.00) of so much of the fund (\$342,450.80) as was derived from proceeds of the land scrip donated by Act of Congress, July 2, 1862, be limited to the restrictions of the second clause of Section 5 of said Act of Congress.

A recess was taken.

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November 11, 1881.

Board met at 10 o'clock A.M.

On motion, duly carried, Capt. C. A. Barton was employed as agent for the sale, etc., of the Virginia Military Lands, at the rate of \$50.00 per month until the 1st of January, 1882; and, after that time, at a reasonable compensation for services required of him.

*Ordered*, That the appropriation of June 19th, 1880, for a model of the horse, is hereby rescinded.

*Ordered*, That \$150 be, and is hereby appropriated, to defray the traveling expenses only, of Dr. Townshend, Prof. Lazenby, and other Professors, in attending Farmers' Institutes.

On motion, the election of Officers of the Board for the ensuing year was proceeded with, whereupon,

James B. Jamison was elected President of the Board.

James H. Anderson was elected Vice President of the Board.

Albert Allen was elected Secretary of the Board.

Henry S. Babbitt was elected Treasurer of the Board.

## EXECUTIVE COMMITTEE.

J. H. Anderson, L. B. Wing, and T. J. Godfrey.

## FARM COMMITTEE.

L. B. Wing, S. H. Ellis, and James B. Jamison.

## FINANCE COMMITTEE.

T. J. Godfrey, S. H. Ellis, and Alston Ellis.

The Secretary was instructed to have the bond of the Treasurer executed and filed.

The following amendment to the By-Laws was offered and passed:

"Amend Section 1 by inserting after the word 'President,' the words 'Vice President,' and amend Section 8 by adding the following:

'In the absence of the President, the Vice President shall perform all the duties of the President.'"

Messrs. Anderson and Godfrey were appointed a committee to report on raising the salary of Alice Williams, Assistant in the Department of Modern Languages.

The Farm Committee made the following report:

Your Farm Committee respectfully report that we have carefully examined the accounts and vouchers of C. E. Thorn, late Farm Manager, and find them, in all respects, full and correct, and recommend that they be approved by the Board.

(Signed)

JAMES B. JAMISON, }  
S. H. ELLIS, } *Farm Committee.*  
T. J. GODFREY, }

The report was approved.

*Ordered*, That \$61.88 be, and is hereby appropriated, to make good the deficiencies in the property, under the control of the Military Department, belonging to the Ordnance Department of the United States, since the same came into the possession of the University.

*Ordered*, That \$275 be, and is hereby appropriated, to pay assistant teachers in the Department of Latin and Greek during the present collegiate year.

*Ordered*, That \$40 be appropriated for supplies in the Department of Industrial Art, and \$175 in the Department of Zoölogy.

*Ordered*, That a sum not to exceed \$150 may be expended by Dr. Townshend in the purchase of models and materials for his department.

*Ordered*, That a sum not to exceed \$200 may be expended by Prof. Lazenby in equipping his department, subject to the approval of the Executive Committee.

*Resolved*, That the matter of putting shutters on Profs. Tuttle's and Lord's lecture rooms be referred to the Executive Committee, with the power to act, as well as the removal of cases and tables in the Physical Department.

*Resolved*, That the employment of Newton M. Anderson in the department of Physics, and W. K. Cherryholmes in the department of Zoölogy, as assistant teachers, without compensation, is hereby authorized.

*Resolved*, That the division of land and implements between the Horticultural

and Agricultural Departments be referred to the Farm Committee, with full power to make the same.

On motion of Mr. Wing,

*Resolved*, That each Professor be required to furnish to the Secretary before the close of the present collegiate year, a full and complete inventory of all apparatus or equipment of any kind belonging to his respective department, and annually thereafter, a list of all additions or losses in such outfit as may have occurred; and that the same be recorded and kept by the Secretary, in book form, for reference.

On motion, it was

*Resolved*, That the application of Lieutenant Ruhlen for the better equipment of the officers of the Military Department by the substitution of belts and shoulder straps, and the repair of the swords, be and is hereby referred to the Executive Committee with power to act.

The Committee, to which was referred the matter of Alice Williams' salary, made a report recommending its increase to \$800 for the full collegiate year. The report was approved.

*Resolved*, That the matter of improving and repairing the Janitor's house, be referred to the Executive Committee, and that any new distribution of class or lecture rooms be postponed until next meeting of the board.

The report of the Farm Committee was presented and approved.

The Finance Committee submitted the following :

"Your Committee to whom was referred the report of the Treasurer with vouchers, would report that we have examined the same in connection with the certificates and orders of the Secretary, and they are hereby approved.

(Signed)

T. J. GODFREY, } *Financial Committee.*  
S. H. ELLIS, }

On motion,

*Ordered*, That there be appropriated for supplies for the Mining Department, four hundred and thirteen and  $\frac{4}{10}$  dollars, being the amount undrawn of the appropriation made by the General Assembly of Ohio, April 16th, 1880, and the Secretary is directed to draw his order upon the Auditor of State for the above sum, and certify the same into the treasury for disbursement, subject to the direction of the Executive Committee.

JAS. B. JAMISON, *President.*

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COLUMBUS, OHIO, *January 3, 1882.*

At a called meeting of the Board for 10 o'clock A. M., January 3d, the following members were present: Messrs. S. H. Ellis, Anderson, Godfrey, Jamison and Wing.

The minutes of the previous meeting were approved.

The Executive Committee presented a report of their proceedings, and the same was approved. The Secretary presented a copy of the estimates for the current year, furnished by the Auditor of State, which was duly considered and adopted.

A recess was taken until Thursday, January 5th, 9 o'clock A. M. The Board, on reassembling, was addressed by Mr. W. R. Parsons, of Worthington, as a committee of one from the Jersey Cattle Breeders' Association, requesting that the Board make arrangements at the University farm to have reliable tests of the relative production of milk and butter of any pedigreed breeds, of dairy cows or their crosses which might be furnished by the owners of such cows. The matter was referred to the Farm Committee, with power to act.

The Secretary was instructed to purchase, from time to time, as published, any additional volumes of the American Jersey Cattle Club Register to complete the series already on hand in the library.

On motion,

*Ordered*, That the sum of \$200 be, and the same is hereby appropriated for the purchase of supplies for the department of Physics during the full collegiate year.

*Ordered*, That the Secretary draw his warrant for the payment of postage for the distribution of the annual catalogue by the President and Faculty of the college, whenever the same is necessary.

On motion, it was

*Resolved*, That the preamble and resolution, passed by the Board of Trustees February 25, 1881, in relation to the claims of the State of Ohio against the General Government for the location of land warrants, be and the same is hereby rescinded; and, if any appointment of an agent, as named therein, has been made by the President, the same is hereby revoked.

The Treasurer presented a schedule of all notes due the University on account of sales of Virginia Military Lands, now in his hands, and the same was ordered to be filed.

*Ordered*, That the sum of \$100 be, and the same is hereby appropriated for fitting up a basement room for the use of the Department of Physics, to be expended under the direction of the Secretary.

On motion, Mr. Godfrey was appointed a committee of one to attend to the collection of a claim against F. M. Beebe.

A full conference was held with Capt. Barton, agent for the sale of Virginia Military Lands, concerning various matters relative to said lands, the character of the notes, and the best method of collecting them.

Capt. Barton was continued as agent of the Board at the rate of \$50

per month from January 1st to April 1st, and at the rate of \$40 per month from April 1st to July 1st, 1882.

Messrs. Godfrey and Jamison were appointed a committee to confer with the Attorney-General concerning any legal hindrance to a daily Chapel service at the University, and report the opinion of said Attorney-General to the Secretary to be spread upon the minutes of this meeting.

The following communication was received from Attorney-General Nash :

ATTORNEY-GENERAL'S OFFICE, *January 10, 1882.*

*Hon. T. J. Godfrey and Hon. Jas. B. Jamison, Committee of  
the Board of Trustees of the Ohio State University, Columbus, O. :*

GENTLEMEN: I have received and carefully considered yours of the 4th inst. You state that on the 15th day of January, 1881, the Board of Trustees of the Ohio State University adopted the following resolutions:

"1. *Resolved*, That the President and Faculty of Ohio State University are hereby instructed to arrange for holding, daily, a general meeting of the students in the University Chapel.

"2. *Resolved*, That the nature of the exercises and the time of holding the same, shall be matters under the control of the faculty."

That on the 20th day of January, 1881, it suspended its former action, and that afterwards on November 10, 1881, it adopted the following resolution :

"*Resolved*, That the resolution passed January 5, 1881, concerning a daily assemblage of the students of the University, are hereby re-affirmed; and that in addition thereto the Board hereby recommends the reading of the scriptures (without comment) and prayers, at the discretion of the President of the University, as part of said services."

You ask, "Is there any legal hindrance to the carrying out of the above resolutions, and especially the recommendation contained in the last resolution?"

The Legislature has placed the management of the Ohio State University exclusively under the control of the Board of Trustees, and I think the resolutions adopted, and recommendations made by the board and above recited, are clearly within the scope of its authority. I believe that in this opinion I am sustained by the case of the Board of Education of the City of Cincinnati vs. Minor et al., 23rd O. S. R., page 211.

Very truly yours,

(Signed)

GEORGE K. NASH,  
*Attorney-General.*  
J. H. ANDERSON,  
*Vice-President.*

Board adjourned.



COLUMBUS, OHIO, *March 9, 1882.*

At a called meeting of the Board of Trustees, held this day at the office of the Secretary, Messrs. Anderson, S. H. Ellis, Godfrey and Jamison were present.

The President, Mr. Jamison, was authorized to re-insure the farm-barn.

*Ordered*, That \$45 be appropriated by the board for the purchase of an Oil Lantern, for the use of the Department of History and Philosophy.

*Ordered*, That the Secretary draw his warrant on the Treasurer for any deficiencies in the Professor's expenses in attending Farmers' Institutes, not provided for in the appropriation for this purpose, when the bills shall have been approved by the Executive Committee.

*Ordered*, That the sum of five hundred and fifty dollars be, and the same is hereby appropriated for the purchase of a team of horses for the Horticultural Department, and for such other equipment in the way of tools, seed, plants, trees, etc., as is set forth in the report of the Professor of Horticulture and Botany, as needed for the use of the same. All bills or accounts for these purposes are to be approved by the Chairman of the Farm Committee for payment.

*Ordered*, That the sum of \$400, subject to the order of the Chairman of the Farm Committee, be advanced to the Farm Committee to pay current expenses of the Horticultural Department, labor, etc., until such time as the proceeds, arising from products of horticultural productions sold, will enable said committee to cover the above amount back into the treasury.

*Ordered*, That all legislative appropriations which may be made during the present session of the General Assembly be placed under the control of the Executive Committee, with authority to take all legal and necessary steps to carry out the objects for which said appropriations may be made; and upon their order the Secretary shall draw his warrant on the Auditor of State for the payment of all legitimate bills or accounts properly payable from any of said appropriations for whatsoever purpose made.

Prof. McFarland was authorized, with the concurrence of Prof. Lazenby and President Scott, to mark out the line of the dividing fence between the campus and the experimental vegetable grounds lying east of the college, and the separation of the two by a barbed wire fence.

Messrs. Godfrey, Sec'y Allen, and Profs. McFarland and Lazenby were appointed a committee to locate the fence marking the boundary line of the campus south of the present wagon entrance to the college from High street.

(Signed)

J. H. ANDERSON, *Vice-President.*

COLUMBUS, OHIO, *April 17, 1882.*

At a called meeting of the Board of Trustees the following members were present at the hour of meeting, 2 o'clock P. M.: Messrs. Wing, Jamison, Alston Ellis, Anderson and Godfrey. A communication was presented by President Scott from Prof. Norton, asking for an appropriation for supplies for his department, whereupon it was

*Ordered*, That the sum of \$500.00 be and the same is hereby appropriated for the purchase, in Europe, of supplies for the Chemical Department during the session of 1882-83.

A communication was read from Prof. Tuttle, asking leave of absence for one year to perfect himself more fully for the work in his department. After hearing Prof. Tuttle, and duly considering the matter in its bearing upon the interest of the University, the Board decided not to grant the request.

The insurance of the dormitories, previously ordered by the Executive Committee, was approved.

The Board having visited the University and looked over the grounds, with the view of locating the Chemical Laboratory, spent the evening in considering the site and design of the proposed building.

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TUESDAY MORNING, *April 18, 1882.*

The Board, upon reassembling, decided—

That the Chemical Laboratory be located north-east of the main University building with the front south, and at such distance from the other buildings (hereafter to be determined) as may seem best, for purposes of security against fire and for general architectural effect.

On motion, it was agreed—

That the building should be two stories in height with a basement reaching 120 feet from the eastern end of the building, under the main body of the laboratory, and having an elevation of eight feet to the ceiling under the first floor.

On motion,

*Resolved*, That J. T. Harris & Co., architects, be instructed and requested to have ready by the second day of May next, such plans, drawings, specifications and estimates of the Chemical Laboratory as will be necessary to meet all legal requirements relating to public building previous to publication of proposals for the erection of the building.

On motion,

*Resolved*, That the Board adjourn to meet in Columbus on Tuesday, May 2, 1882, at ten o'clock, A. M.

(Signed)

J. H. ANDERSON, *Vice-President.*

COLUMBUS, OHIO, *May 2, 1882.*

The Board met pursuant to adjournment at 10 o'clock A.M.

Present—Messrs. Anderson, Alston Ellis, S. H. Ellis, Godfrey and Wing.

The minutes of the last three meetings were read and approved.

Mr. Godfrey, as a committee of one, made a verbal report on the case of F. M. Beebe.

J. T. Harris, architect, appeared before the Board with plans, specifications, and estimates for the Chemical Laboratory. After considering the same, the Board, by a unanimous vote, adopted said plans, specifications, and estimates, and authorized the Vice-President, in the absence of the President, to approve the same with his signature. The Secretary was ordered to present a copy of the same to the State officers designated by law for their approval, and to advertise for proposals to build said Laboratory, according to law, and to fix the day for opening any and all bids received, on Thursday, June 8, 1882, between the hours of 10 and 12 A. M. The Secretary was also authorized to furnish printed blank forms of proposals to the architect, for the use of bidders.

The Board then proceeded to the University, and selected as a site for the Chemical Laboratory, the following, viz.:

The south-west corner of the building to be located at a point one hundred feet distant from the main east wall of the Mechanical Laboratory, and the south front of the building on the same line (due East and West) with the front of the Mechanical Laboratory.

On re-assembling at the office of the Secretary, the following resolution was passed:

*Resolved*, That J. T. Harris, architect, be authorized to prepare and present to the Board on the 8th of June next, the plans, specifications, and estimates of four residences, to be built on the grounds of the University, not to exceed, in cost of construction, an aggregate of \$14,000.00.

A communication from S. Kendrick to C. A. Barton, relating to compensation for the discovery of Virginia Military Lands, was read and laid on the table until the next meeting of the Board in June.

Messrs. Ohmer, Mix, and Chamberlain, members of the Board of Control of the Experimental Station, appeared by invitation before the Trustees, and, after a general conference between the respective boards, it was agreed to assign for the exclusive use of the Experimental Board during this year, a certain portion of land lying east of the University building, designated by them as suitable for the purpose contemplated, and now known as the experimental vegetable garden plot. Assurances

were tendered them by the Trustees that every reasonable facility that the University could offer them in the prosecution of their work, would be afforded.

*Ordered*, That the Secretary of the Board of Trustees of the Ohio State University be, and he is hereby authorized to draw his warrant on the Auditor of State for the payment of all bills or accounts properly payable from any of the several legislative appropriations for the Ohio State University, made during the last session of the General Assembly, whenever the same shall have been approved by the Chairman of the Executive Committee, or two members thereof, or by the President of the Board.

On motion, the Board adjourned to meet on Thursday, June 8th, at 9 o'clock A.M.

(Signed)

JAS. B. JAMISON, *President*.

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COLUMBUS, O., *June 8, 1882.*

Board met at 9 o'clock A.M.

Present—Messrs. Anderson, S. H. Ellis, Godfrey, Jamison and Wing.

The minutes of the previous meeting were read and approved.

On motion of Mr. Ellis, the action of the Board, at their meeting on April 17, 1882, was reconsidered, and leave of absence for one year, without pay, was granted to Prof. A. H. Tuttle.

*Ordered*, That the bill of expenses, amounting to \$47.15, incurred by President Scott in his recent visit to eastern colleges be paid.

The proposals for building the Chemical Laboratory were duly opened at the time designated in the published notice. It was found that the bid of Clark & Fahey, of eighteen thousand seven hundred and fifty dollars (\$18,750), was the lowest and best for the interest of the State. The Secretary and Architect were instructed to draw up the contract with said parties, and to insert a forfeiture of \$10 per day for each day that the building remains incomplete after December 1, 1882, and to present the same for approval to the Attorney-General, and, subsequently, to file the approved contract with the Auditor of State.

On motion, it was

*Resolved*, That J. T. Harris, Architect, in consultation with Judge Anderson, be instructed to prepare plans, estimates, and specifications for three residences of different styles and cost, not exceeding in the aggregate \$12,000, and to present the same at the next meeting of the Board.

Prof. McFarland was intrusted with the construction and management of grounds for the athletic sports of students.

The Secretary was authorized to issue proposals for furnishing the University with the annual supply of coal, the bids to close Monday, June 19, 1882.

J. H. Anderson was empowered to make such arrangements for holding the commencement exercises on the campus as circumstances would justify in his judgment.

The Board adjourned to meet June 20, 1882, at 8 o'clock A. M.

(Signed)

JAS. B. JAMISON, *President*.

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COLUMBUS, O., *June 20, 1882.*

The Board met at 9 o'clock A. M.

Present—Messrs. Anderson, Godfrey, S. H. Ellis, Jamison and Wing.

The minutes of the previous meeting were corrected and approved. Mr. Harris, Architect, appeared before the Board with plans, estimates and specifications for four residences, numbered one, two, three and four. After careful examination of the same, the Board approved them, and instructed the Architect to file with the Auditor copies of said plans, etc., after the same had been approved by the proper State officers.

The Secretary was instructed to advertise for bids for the building of one or more of each kind, and to fix the 31st day of July, noon, as the time for closing the bids.

Prof. Mendenhall was granted the privilege of placing the large chronometer under the care of Mr. Tress, in his store, during the vacation.

Bids for supplying from 500 to 800 tons of coal to the University during the next college year were opened, and the contract was awarded to the lowest bidder—the Ohio Coal Exchange per W. B. Brooks & Son, at \$2.05 per ton, provided that a satisfactory bond for the performance of the contract is offered.

The reports of Prof. McFarland, as Bursar and Lawn Superintendent, were received and approved.

After a recess the Board met at the University, when the following students of the University were recommended by the President of the Faculty for the degrees named, which were duly conferred :

For the degree B.A.—

Willis F. Fay, Franklin county, Ohio.

Irvin Linson, Greene county, Ohio.

For the degree B.Sc.—

William W. Donham, Clermont county, Ohio.

Oliver L. Fassig, Franklin county, Ohio.

Sioux Glover, " "

Horace L. Wilgus, " "

John A. McDowell, " "

For the degree M.E.—

Frederick Keffer, Cuyahoga county, Ohio.

David O'Brine, Franklin county, Ohio.

The present Faculty of the University were re-elected at the former salaries, excepting those of Professors Derby and Short, which were advanced to \$2,250 each, and that of Prof. Mason to \$1,400.

The following "assistants" were appointed to teach in the departments named, to wit:

C. C. Green, Elementary Zoölogy, fall term, salary.....	\$100 00
H. L. Wilgus, Elementary Physiology, fall term, salary .....	150 00
N. W. Anderson, Department of Physics, one year, salary .....	300 00
David O'Brine, " Chemistry, one year, salary.....	300 00
James P. Milligan, President's Clerk, salary.....	75 00

*Ordered*, That one hundred dollars be appropriated for the purchase of such books as the President may select for his department.

*Ordered*, That \$200 be appropriated for the use of Prof. Derby, in the purchase of books for his department.

*Ordered*, That \$300 be appropriated for the purchase of books for the library.

The Secretary was instructed to tender Silas Martin, artist, the thanks of the Board for the excellent portrait in oil of Prof. Justus Liebig presented by him to the University, and to have the same appropriately framed.

On motion of Mr. Anderson, it was

*Resolved*, That Prof. Edward Orton, former President of this University, and President Walter Q. Scott be solicited for their portraits, to be placed in the President's office at the University.

The Board then adjourned until 8 o'clock A.M. June 21st.

Board met pursuant to adjournment.

On motion of Mr. Godfrey, Dr. Townshend was requested to attend the convention of agricultural professors at Ames, Iowa, and to invite on behalf of the Board, said convention to hold some future sessions at this place.

The Secretary was instructed to pay Dr. Townshend's expenses incurred in attending said convention.

Assistant Engineer U. S. Navy, F. H. Eldridge, appeared before the Board, and presented his order from the Secretary of the Navy detailing

him as Professor in the Ohio State University. The order was properly acknowledged, and on motion of Mr. Wing, it was

*Resolved*, That the Board accepts with pleasure the assignment of F. H. Eldridge, Assistant Engineer U. S. Navy, for duty as a Professor in the Ohio State University; and that he be requested to report to the Faculty of the University for the adjustment of his work as instructor at the beginning of the next academic year.

*Ordered*, That \$400 be appropriated for the home purchase of chemicals for the Department of Chemistry.

*Ordered*, That the unexpended balance for supplies for the Chemical Department, of last year, be appropriated for the purchase of induction coils.

On motion, Captain C. A. Barton was authorized to settle with G. W. Hackworth, John Hazlebaker, and Jones & Newcomb, by paying to each the balance paid by them severally to the University, and fifty per cent. additional. Capt. Barton presented a statement showing the amount collected on notes and from cash sales, with expenses incurred since his last settlement in November, 1881. Whereupon the Secretary was instructed to settle with him according to said statements, and also to pay his salary to July 1, 1882.

Mr. Godfrey was authorized to enter into a contract with Samuel Kendrick, for the discovery of lands in the Virginia Military Survey, upon the basis of thirty-three per cent. of net proceeds therefrom, to go to said Kendrick, such contract to be limited in duration to one year from this date.

On motion, C. A. Barton was continued as agent of the board for these lands at \$40 per month until November 15, 1882.

The board then adjourned to meet August 1, 1882, at 9 o'clock A.M.

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COLUMBUS, OHIO, *August 1, 1882.*

The board met at 9 o'clock A.M.

Present—Messrs. Jamison, Wing, Godfrey and Alston Ellis.

The bids for building three private residences on the college grounds were then opened.

Bids were offered by Messrs.

Clark & Fahey, on Plan No. 1,	\$4,540;	No. 2,	\$5,134;	No. 3,	\$6,400;	No. 4,	\$5,900.
Powell & McDonald,	" 4,055;	" 4,590;	" 5,780;	" 4,875.			
George W. Gibson,	" 4,510;	" 4,710 <sup>1/2</sup> ;	" 6,033 <sup>1/2</sup> ;	" 4,747 <sup>1/2</sup> .			
Robert Wood,	" 4,217;	" 4,524;	" 5,700;	" 4,800.			



On motion of Mr. Ellis, the bids of Robert Wood for two buildings of Plan No. 2, and one of Plan No. 4 (frame)—the two of Plan No. 2 at \$4,524 each, with attic stairs and floor, and No. 4 at \$4,800, were accepted; and the architect was instructed to name December 15, 1882, in the contract as the date of their completion.

On motion, Miss Minnie E. Bird was appointed Assistant Librarian for the next collegiate year, at a salary of \$125.

*Ordered*, That a sum not exceeding \$200 be, and the same is hereby appropriated for advertising the University by President Scott.

A recess was then taken until 8 o'clock P.M.

Messrs. Lazenby and Chamberlain, members of the Board of Control of the Ohio Agricultural Experimental Station, submitted the following plan as a basis of co-operation between the Board of Control and the Board of Trustees of the Ohio State University, to wit:

*To the Trustees of the Ohio State University:*

GENTLEMEN: The Board of Control of the Ohio Agricultural Experimental Station ask permission to carry on the work of the Station at the Ohio State University upon the following conditions:

1st. To have free use of the field lying south of the University campus and west of the house now occupied by Prof. Derby, which is to be platted and wholly devoted to experiments.

2d. To conduct such experiments on the University farm, and in the fruit and vegetable gardens, as may be mutually agreed upon by the Board of Control and the Professors in charge of the same, all the experiments on the farm to be under the direction of the Professor of Agriculture, and those in the gardens under the direction of the Professor of Horculture—the work to be done and the expenses to be borne by the Station.

3d. To have free use of a team, implements, and tools belonging to the University—the Station to pay for all labor therewith.

4th. The Station to turn over to the University, for the use of the land, implements, etc., all products raised, except what it needs for seed, museum purposes and the like.

5th. To have rooms in the Agricultural Chemical Department of the new Chemical Laboratory for storing samples of seeds, soils, fertilizers, etc., for making weights, measures, experimenting in germination and similar work.

6th. The Station to pay a fair proportion—according to work done—of the salary of a competent agricultural chemist, who may be employed by the University to teach Agricultural Chemistry.

(Signed)

WM. R. LAZENBY, *Director*.

On motion of Mr. Wing, the above proposition was accepted by the Board of Trustees.



The Board then adjourned until the 8 o'clock A.M. August 2.

The Board met at 8 o'clock A.M., August 2, at the University, and proceeded to examine sites for the location of the new residences about to be erected. The same was agreed upon and designated by stakes. After a general consideration of business matters, the following resolution was adopted :

*Resolved*, That all accounts, bills or estimates properly chargeable against the funds derived from the sale of the Virginia Military Lands, the expenditure of which is regulated by an act of the Legislature, passed April 17, 1882 (see vol. 79, p. 144 of Laws of Ohio), shall be approved by the Chairman of the Executive Committee before payment, and he is hereby authorized to sign all contracts for the erection of residences ordered by the Board.

The Board then adjourned, subject to the call of the President.

(Signed)

JAS. B. JAMISON, *President*.

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COLUMBUS, OHIO, *August 30, 1882.*

The Board met at 7 o'clock P.M.

Present—Messrs. Anderson, Wing, S. H. Ellis, Jamison and Godfrey.

The minutes of the previous meeting were read and approved.

Samuel Kendrick, of Chillicothe, Ohio, appeared before the Board in relation to the discovery of Virginia Military Lands. After a full discussion, the matter was referred to Mr. Godfrey, with authority to prepare and submit such a resolution to the Board as would cover the ground informally agreed to by the Board and said Mr. Kendrick.

Wm. Halley's proposition for carrying the water on the different floors of the main dormitory to a tank on the upper floor, for the sum of \$85, was accepted.

Board then took a recess until morning.

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THURSDAY, *August 31, 1882—9 o'clock A. M*

The Board repaired to the college grounds, and having located the site of the third residence about to be built for the professors, reassembled at 11 o'clock.

Mr. Godfrey submitted the following resolution, which was unanimously adopted:

*Resolved*, That Samuel Kendrick, of Chillicothe, be, and he is hereby authorized by this Board to discover, survey, plat, cause to be appraised, and sell undiscovered

lands in the Virginia Military District belonging to the Ohio State University, and known as Virginia Military Lands. The sales and the conduct of all litigations and negotiations concerning the same to be reported to the Executive Committee of this Board, and by said Committee approved, before the same shall be binding upon either party. After said approval, all expenses of surveying, appraising, or litigating, and other necessary expenses incurred, save and except the time given by the said Kendrick, to be paid out of such funds as may arise from each tract of said lands by sale or compromise, and the residue of each tract to be divided as follows: to the Ohio State University, 66 $\frac{2}{3}$  per centum, and to said Kendrick, 33 $\frac{1}{3}$  per centum. All moneys received by said Kendrick, excepting his expenses, as aforesaid, incurred, and his 33 $\frac{1}{3}$  per centum, shall, in all cases, be promptly paid to the Treasurer of this Board as soon as received. Undiscovered lands shall be held to include all of said Virginia Military Lands reported by said Kendrick, and not known to this Board or any of its former or present agents.

The said Kendrick is hereby fully authorized to compromise and settle any case or cases, with the approval of said Executive Committee—this authority to terminate on the 10th day of November, 1888. The said Kendrick is to be entitled to the said 33 $\frac{1}{3}$  per centum of all cases reported by him and approved by said Committee, and not finally settled at the date fixed for the termination of this authority. When said reported cases are finally severally settled, the proper agents and officers of this Board are to make titles, bonds, and conveyances, as provided by statute, for each tract of said lands, when requested by said Kendrick and approved by said Executive Committee.

The foregoing authority, and the terms thereof, are by me approved and accepted, this 31st day of August, 1882.

(Signed)

SAM. KENDRICK.

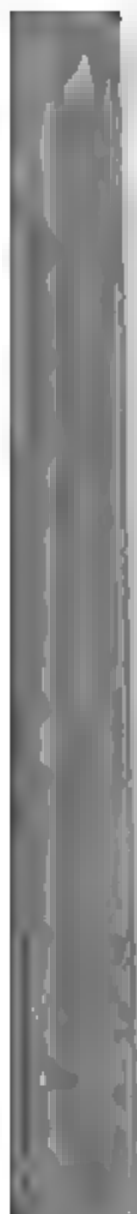
President Scott and the Secretary were instructed to prepare several additional rooms in the Main Dormitory for the use of students, at a cost not exceeding \$25 each.

On motion, Section two (2) of the By-laws was amended to read "second Tuesday" of November, instead of "third Thursday." The Secretary reported that, after consultation with the Vice-President, he had transferred all the policies of insurance held by the University in the Home Insurance Company of Columbus, Ohio, to the Queen Insurance Company of Liverpool, England, without any loss of premiums paid.

The act was fully approved by the Board.

(Signed)

JAMES B. JAMISON,  
*President.*



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**INAUGURAL ADDRESS**  
**OF**  
**WALTER QUINCY SCOTT,**

*President of the Ohio State University.*

Delivered at the Ninth Annual Commencement, June 21st, 1882.

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This first commencement under the present administration has been deemed a fitting occasion for a more formal and extended address than the brief response I made a year ago, when my honored predecessor placed in my hands the keys of this Institution.

A formal address upon that occasion would have been both out of place and out of time. And I must set aside my own pleasure now in

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**NOTE.**—The resignation of President Orton was tendered to the Board of Trustees June 20th, 1878, but was not accepted till June 21st, 1881, when the Board reluctantly yielded to President Orton's desire to be relieved of the executive office, in order to devote his entire time to the department of Geology. He was the first President of the University, and its rapid growth during the eight years of his administration was largely due to his wisdom, energy, and manifold powers as an educator.

In accepting his resignation the Board of Trustees unanimously adopted the following resolutions:

**WHEREAS**, Edward Orton, President of the Ohio State University, to enable him to devote more time to his special department—Geology—has seen fit to tender his resignation as President, after a continuous service of eight years; therefore,

*Resolved*, That in accepting it, which we do with unfeigned regret, we feel that words are powerless to express our high appreciation of his faithful, conscientious, and able services in behalf of the University.

*Resolved*, That in his special field, which his earnest endeavors, thorough scholarship, and practical talents will still further adorn, he should have and will receive our hearty well wishes and co-operation.

*Resolved*, That as a recognition of his eminent labors at the head of our institution, the honorary degree of LL.D. be, and the same is hereby conferred on him.

On the 21st of June, 1881, Professor Walter Quincy Scott, of Easton, Pennsylvania, was elected the successor of President Orton. Upon the following day, at the Commencement exercises of the University, President Orton delivered an address appropriate to the occasion of his retirement from executive duties, and by direction of the Trustees, placed the keys of the University in the hands of his successor. Professor Scott made a brief response, accepting the keys.

It was deemed fitting to postpone the formal inaugural address of President Scott till the following Commencement, June 21st, 1882.

yielding to the apparent propriety of a discourse which may be reasonably expected to set forth what has been accomplished in the foundation and work of this University, and to indicate the development of these results.

The transition from one administration to the next in civil government is often characterized by arbitrary changes of officers and methods either to satisfy the demands of patronage or the requirements of policy. But an institution of learning cannot properly be subjected to such a form of administration. Its trusts and its government are all of such a kind that the idea of administration is far less conspicuous than the organic elements and spirit exhibited in the instruction and culture of the young.

Changes in the corps of custodians, or of instructors, for all causes combined, are commonly so gradually and conservatively made, that the tree of knowledge is only pruned for better growth by the vicissitudes that must occur in individual lives.

In civil affairs, the officers and the machinery of government are so identified with the idea of administration that the principles for which alone the government is ordained are grossly or wholly misunderstood by multitudes of the people. To-day they think the defeat of a party is the ruin of the nation. To-morrow they see more clearly what the nation is.

But in an institution of learning, the officers of instruction and government are so subordinated to the purposes of education that even the humblest pupils soon learn to realize that the elements of knowledge, morality, and religion within themselves are vastly superior to the visible apparatus and authority by means of which their education is accomplished.

This supremacy of the organic ideas over the visible forms of the equipment and administration of the University requires that the law of natural growth shall determine the plan and the extent of whatever visible changes may be made. Changes in the Board of Trustees or in the Faculty or in the curricula always do more harm than good, except when the organic ideas remain undisturbed in their original foundations, with entire freedom to grow. This University cannot hope to develop the great and complicated ideas embodied in its organization without the substantial continuity of its Trustees and Faculty. And when we consider how little the idea of a State University had been developed in public sentiment when this Institution was founded a few years ago, it is really remarkable that it should present to-day

a solidity of organization not surpassed, if equaled, anywhere among the collegiate institutions in the State.

It is not only a good omen of what this great State will demand of such a University, but it enhances the honor that must forever be paid to the administration of President Orton—*nomen venerabile et clarum*. His hand was at the helm when this noble ship was launched, and for eight years his masterly grip and watchful eye guaranteed safety amid breakers on every side. Not till the open sea appeared did he ask release from the arduous labors of his post. No wonder that his colleagues wanted him still for their leader, nor that the trustees declined to accept his resignation, till at last he forced it upon them. Welcomed among his colleagues in the chair he filled with signal ability in addition to his executive duties, he made the Trustees, by remaining in the Faculty, more willing to entrust executive responsibilities to his successor. The harmony of spirit and unity of action which have so plainly marked the events of the past year, have therefore been mainly due to the wisdom and ability of my colleagues.

Let us, then, avail ourselves of this timely occasion, to look upon the growth of this Institution. Let us seek to know its organic ideas, and to be filled with their spirit.

In the first place, this Institution originated in a *national idea of education*. That is a very broad and very deep foundation.

Let history take care to record the grand fact that in the darkest hour of a terrible civil war springing from slavery, the National Congress performed a quiet and almost unobserved act, which showed as no other act could show, the spirit of free institutions and a calm faith in destiny. It endowed with a vast area of the national domain institutions for higher education in every State. No private fortunes nor corporate enterprise could have accomplished such a great result. It demanded the wealth and the authority of the whole people.

In the next place, this State, like the rest, adopted the national idea and accepted the sacred trust in behalf of all the citizens of the Commonwealth. The State of Ohio is forever indebted to the Nation for the original endowment of this University, and is forever pledged to maintain and support the liberal and practical education which is here offered to all the youth of the State.

Consider this coöperation of the Nation and the State in the foundation of this seat of learning.

The Nation's endowment was not a gift to be expended or used by the State at its own will or pleasure. It was an endowment placed in the hands of the State as a trustee. The object of the trust and the

terms thereof are explicitly declared. Who is the beneficiary? or who are the beneficiaries of this great trust? The State is the trustee for her own benefit. But the benefit of the State is not the entire nor ultimate object of this national endowment. The Nation itself claims the entire ultimate benefit of her bounty to the States. It is for the welfare of the whole people of the United States that millions of acres of the national domain were given. The principle is plain. The United States are a nation. The States do not exist for themselves. They exist for the nation. No State is a law unto itself. Every State is subject to the Nation in everything essential to the national integrity. The Nation draws the territorial boundary of the State, guarantees its form of government, determines its relations with all the other States, enumerates its representatives in the National Congress.

The Nation is not an abstract idea. It is not what is left after subtracting one or more, or all the States. It is not composed of conterminous provinces, nor of contiguous peoples. The Nation is a living organism. It has a life, ideas, feeling, spirit of its own. Its constitution and its government are supreme over all the land and over the whole people. It has plans and purposes, duties and privileges, a mission to fulfill among the nations of the earth, and a sense of destiny.

The first duty of a Nation is self-preservation. But a Nation is worth only what its individual citizens are worth, in any and in all respects. And when self-government is the fundamental idea of a Nation, the national government must be so administered as to provide for the self-government of each citizen. Its prosperity and its perpetuity depend upon the intelligence and morality of the people, counted one by one.

For this reason there is nothing more liable to error than the opinion of an individual respecting the proper powers and functions of a Nation. It is quite common for a man to have a clearer perception of the proper functions of a foreign State than of his own. For he sees the general ideas of a remote government, while those of his native State are obscured by the multitude of local events around him. His judgment of fundamental laws is less disturbed when applied to a system of government separated from those affairs of his own daily experience, which operate through his own pleasures and pains to produce prejudice rather than wisdom. The National idea is constituted of moral elements, of which we know nothing until experience has produced the moral organization of the community. It is for this reason that a State at its origin is known vaguely but felt deeply as a moral movement of the community. Where the State rises from a few individuals by the slow



growth of the population, the moral organism of the State is slowly discovered and feebly felt. Where the State originates by the sudden separation of a mass of population from a State already highly organized, the powers and forces of the new State are vividly realized in moral ideas that break forth in speech, and song, and battle, while yet the visible forms of government, the machineries of the organized community, its industrial appliances, its military equipment, its social regulations, are all to be invented, and framed, and operated in consequence of the moral ideas which make up the constitution of the community, the genius of which is first, last, and always the spirit of the people. Therefore, in the earlier history of a State, it feels its powers of growth rather than its structural forms and functions. So the founder of a State is not only understood by foreign nations, but is first and highest in the hearts of his countrymen. His greatness is of the moral order, and therefore belongs to mankind.

But the moral ideas which constitute the foundation of a State must grow in power and usefulness, by means of the visible organizations that take shape out of the industrial, political, and social activities of the people. These machineries of human action multiply with the increase of the population. They are structural forms of social conduct, which show themselves more and more plainly to the citizen, because the processes of these organizations press in upon his private life with a tendency to control and regulate every act.

With the growth of the population there goes on a constant increase in the complexity of parties, sects, corporations, societies, each claiming the time, the resources, and the loyalty of the citizen, till he is compelled to choose from among them all what he attempts to construct into the proper machinery of his own life. Out of such choice grows the disposition of the individual to identify the form of an organization with his moral ideas of what the whole community should be and do. For this reason each generation tends to become more involved in its own organizations, which absorb so much thought and energy that the moral ideas upon which the State was founded tend to become obscure in the understanding and feeble in the affections. The actual leader of a party, the head of a priesthood, the magnate of a corporation, comes to occupy the public mind to-day, while the fathers and founders of the republic sleep in the public heart, an almost nameless grave.

But moral ideas never die. They grow with the power of the endless life. Men perish, and the visible organizations of society are all transformed into funeral processions at last, and yield up their full meaning to the next generation in the inscriptions upon tombstones.



A military hero is composed of two elements—absolute force and a moral idea. He is the embodiment of the spirit of the State which finds itself, amid the wreck of all organizations, reconstructing out of persons and properties the Commonwealth of the people according to the moral ideas which gave birth to their constitution, and which were the real causes of the growth of the State concealed within the structures of society, and gradually encroached upon by the selfish competitions of organized parties. For there is a natural antagonism between the law of growth and the law of structure in the community as in the individual. The powers of growth in the individual originate by inheritance, and determine the size and form of the body. The law of growth requires freedom of action, and precedes the development of the principles of structure which in turn become dominant when the limits of visible growth are reached and the members of the body strive together within for the mastery. The pains and diseases of later life are social disorders—strikes of laborers, insurrections—and death is the civil war of oneself, out of which the spirit appears as the triumphant hero of man's nature.

The moral ideas upon which a Nation is founded are wrought into the reproductive stock-power of the people. Children get them first mixed with their mothers' milk. Lands and waters, farms and factories, roads and ships, cities and forts, armies and navies,—all these are not the strength, but the overhanging mass of calamity and destruction to a nation when its stock and moral disposition are weak. The philosophic historian does not take the census of these things. He finds the whole vital and lasting strength of the Nation at any time lying in the cradle—in the babies of the people, unable to do anything but grow. Where the Nation reproduces itself, it must preserve itself—an it is the business of the Nation to see that children shall grow up in such courses of training as the fundamental ideas of the Commonwealth require. For this reason there is ever the supreme need among a free people that the youth shall be taught to understand the ideas and to imitate the examples of the fathers and benefactors of the republic. The Nation truly grows only in so far as each generation becomes morally better and stronger than its parent. The patriotic pride of a generation must manifest itself not in boasting of the great deeds and lofty character of former generations or of the founders of the Nation, but in making use of its inheritance to do still better and greater deeds. For descendants never boast of their ancestors until they have become unlike and unworthy of them. Between the ascending growth

and progress of a Nation and its decline, there is always a period of arrested and idle powers characterized by national vanity.

For a Nation at best is only one among other nations. A Nation, therefore, grows best so long as it is pressed round about by other nations more civilized than itself. For it not only can look up to higher examples, but must develop power to protect itself against strength greater than its own.

A Nation is always in danger of decline when surrounding nations are weaker than itself. A man utterly alone in moral greatness, surrounded only by weaklings, may yet, like Moses, find a higher example of character in his conception of the Deity, and exalt his greatness toward his ideal, but the nations are as yet so ignorant of God that each is influenced only by the example of a greater Nation; and when this is wanting, it glorifies itself till its energies are wasted in insolence and oppression toward neighbors, and in vain self-indulgence. And when the eagle is a fool the sparrows can avenge themselves.

Now, what I have said respecting a Nation or State in general, applies with peculiar emphasis to the American people; for the Nation is composed of States, each of which is so like the Nation, that after nearly a century the moral ideas of the constitution broke forth into a terrible civil war to decide the question whether the national government was superior or subordinate to the sovereignty of the individual States.

The national idea destroyed the local governments, and the Nation, as the supreme organism, suddenly rose high among the most mighty nations of the globe, because this vast people had sealed in blood the sovereignty of the National Constitution.

In the history of nations, wars are joined together with great educational movements. The fundamental ideas which survive the destruction of bad institutions spring forth in the moral energy of the Nation. It stirs the heart and the brain of the people. Its mighty power spreads into every form of enterprise, and the material and civil progress of the Nation is shaped and organized according to the national spirit.

The people of this generation are too near the triumph of the Nation over the States, and too much absorbed in the amazing progress of all industries under its sovereign power, to appreciate the perils to free institutions which lie stored up in the national idea itself. We have learned how the people of the State identified its organized

forms with their moral ideas of what the whole country should be, and so encroached upon the very life of the Nation. We are yet to learn how far the whole people of the Nation will come to identify the material results and administrative forms of the national power with the moral ideas and spirit of self-government. For there is a powerful tendency of the visible structures of the administration of a national government, and of the corporate organizations invested by its authority with control of the traffic and the travel of the people, to encroach upon local legislation and upon the rights and liberties of classes of citizens.

Occupying a vast continent between two great oceans, this Nation has no cause to fear a foreign foe. But there is no hope of perpetuating the free self-government of the enormous population crowding in upon this vast territory, except in the intelligence and morality of the people. The whole mass of citizens must be lifted to a much higher level of knowledge and civic virtue than the common people of any Nation has ever yet reached, or the republic is certain to be destroyed. No amount of knowledge and virtue in the governing minority can preserve free institutions if the voters of the Nation are not lifted above the level of knowledge and experience obtained by mere physical labor. We have wiped out the compromise line between the civilization of free labor and the civilization of slavery; we have dissolved the partition lines of the sovereignties of States; but we have laid down lines of continental transportation, and lines of continental telegraphic communication, to which we are adding lines of shipping, and of cables extending across the seas -- all in the hands of private corporations. To these we are adding boundaries around the agricultural and the mineral products of the natural divisions of our soil, and around the areas of service occupied by public buildings and fortifications. All these things, while suppressing territorial sectionalism of the North and the South, and of the East and the West, tend to develop the selfish interests of classes of the people, and are fraught with the perils of antagonism between the upper and the under classes. And it is possible for the conflict between virtuous intelligence and vicious ignorance to become irrepressible.

Because the Nation apprehended peril to itself from its people, from their growing up in ignorance of its moral organism and true nature, the Nation paused in the very midst of civil war, and laid the solemn emphasis of its own struggle for existence upon an act to provide for the higher education of the whole people. By that organic act the Nation entered upon an inviolable contract with the several States for "the support and maintenance of at least one college where the

leading objects shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such a manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

These terms are broad and plain. The Nation had no disposition nor right to use the wealth of the whole people to benefit any class of citizens to the exclusion of other classes. It had no disposition nor right to dictate the manner of teaching, but referred it entirely to the States themselves.

It is neither logical nor wise to press general terms too closely in their applications, but there is no mistaking here the purpose of the Nation to lay hold upon the work of higher education in order to accomplish what had not been done and could not be done by sectarian and private endowments of collegiate education. The liberal and practical education of the industrial classes certainly required that branches of learning relating to agriculture and mechanical arts should be leading objects. Religious denominations never did make and never ought to make such studies the leading objects of their endowments. The preparation they have afforded for the learned professions of theology, law, and medicine, has been ample and thorough. But the developments of modern science outside of these professions have been so vast that industrial education demands parallel and coördinate courses of study for which provision must be made in institutions crowning the systems of public education. But the Nation has no disposition nor right to exclude any branches of knowledge from her seats of learning, and has a duty and a right to require a course of military training.

We may rest assured of the broad fact that in a free country the wealthier classes will not inquire of the State where to send their sons and daughters, and that therefore the National endowment was intended to provide the costly apparatus of higher education in such a way that every class of youth should possess equal opportunities and equal advantages in education. It is, therefore, a supreme obligation of this University, as of all others likewise founded, to administer its endowments so as to keep the higher education within the reach of every earnest student.

We have now considered the National idea of education upon which this institution is based. It is in the second place founded upon the *State idea of education*

The organic law of the National endowment was properly general-

ized so as to be interpreted by each State in harmony with the necessary differences that must obtain in the several systems of public education in the States. The citizens of the several States differ widely in the distribution of their pursuits and professions. Each State is for itself the best judge respecting its own system of public instruction. The Nation left to each State the interpretation of its own needs. Each State was authorized to divide the endowment among several colleges, or to concentrate it in one institution. The result has shown the wisdom of this provision in the law. It was natural that in some of the older States the endowment should be invested in departments of agriculture and mechanic arts, added to institutions already highly organized in other branches of education. The combination of the national endowment with endowments by private citizens, as in the case of Cornell University, illustrated at once the good faith and the wisdom of the State of New York. The noble motto of Cornell, "I would found an institution where any person can find instruction in any study," is a complete response to the requirements of the Nation and the State.

In equally good faith, and with great wisdom, the State of Michigan, having already placed at the head of her system of public instruction a University justly renowned throughout the world, provided an agricultural college upon a separate foundation—an institution worthy of its growing fame.

Let us confide in the good faith and wisdom of Ohio—our own most noble State. A garden land between the great lake and the great river with mountain gates on the East, Ohio is the natural and perpetual highway between the East and the West for all travel and traffic.

Other States are larger in territory, and quite a number will yet acquire a vaster population. But no State is better adapted at present to agriculture, while only a few can maintain superiority in manufactures. We are the third generation since the State was organized, and 3,000,000 of people, nearly 100 to the square mile, are admonished by a failing soil of the imperative need of agricultural education. At the present rate of growth the sixth generation will behold 200 inhabitants to the square mile, and the manufacturing industries exceeding the agricultural pursuits which to-day engage less than half of the population in all classes of occupations. A natural centre of such vast trade and transportation, the highway of products and persons for the whole country. Ohio will continue to be a meeting ground of many varieties of population. The State is already a highway and battle-ground of ideas, and her citizens are distinguished for political and moral activity.

But while her ample provision for primary education has kept pace

with the growth of her population, the State of Ohio must face the fact that her work in higher education imperatively requires to be greatly advanced, or in the competition of States Ohio will inevitably fail to reach and maintain the high rank in all the powers of a State, which it is her privilege and her duty to occupy.

I venture to assert, that there is no problem more worthy of the attention of Ohio to-day than the perfection of her system of public instruction by terminating the instruction of the primary and secondary schools in a complete equipment of higher education.

Let us confidently believe that this great State of Ohio has wisely laid the foundations of liberal and practical education for all her youth.

What is meant by practical education? Consider the apparatus which is here provided.

Here are laboratories of physics and chemistry, and of mechanical and civil engineering. The chief thing to be observed in practical education afforded by laboratories is the discipline of manipulation.

In physics, bodies must be handled every way to learn their quantities and qualities, weight, size, form, density, states of rest and motion, and a multitude of relations, many of which are too obscure to be named.

In chemistry, manipulation must go over the same bodies in different ways. It is nothing to know the names of things in common talk. The student must analyze the solid, the liquid, and the gas, keep handling their minute parts, invisible atoms, watch their combinations and separations along lines of forces. He is a maker of big words, when he tries to tell the numbers and motions of things. Great laws run together through things into his consciousness. He has no name for them yet, but he is our silent expert to handle things.

In mechanics, manipulation is engineering. The masses and motions of bodies are kept in hand and under the eye. Tools and machines must take shape and form and structure according to the same laws that guide manipulation in physics and chemistry, but the processes and results are different. Solids, liquids, gases, are only the outside states of matter. There is a fourth and more states inside. It is little to know the outside names. Manipulation makes practical skill, the kind of knowledge that gets out of things the largest and best supplies of living. Physics, chemistry, and mechanics are all at one in the manipulations that extend into the great industries that build roads, bridges, railways, telegraphs, ships, cities, that supply food and raiment from soils, plants, and animals.

But industrial work is not practical education. That stays with manipulation, the working hand showing things to the consciousness



through the watchful eye, the tender touch, and countless feelings of the sensorium. The training of the mind, its wisdom and skill, are made up of thousands of observations and judgments that are learned in silence from the manipulation of second causes that work along lines of force, and are taken up into the final and voluntary states of consciousness. Most of these are nameless and wordless. The best part of education dies unuttered. It does not belong here.

There is no use in trying to get an education in physical sciences without manipulation. One cannot read it out of books. Words are only physical noises or mere marks without meaning; that must be worked up into consciousness like any other bodies by manipulation. Here are languages ancient and modern, dead and living, in books and in voices. It is only material stuff to be worked up in the laboratory of human bodies through the physical organs of speech. A child at its letters is doing the same that a senior is doing with the words of Plato or of Newton. Grammar breaks up language so as to get it into the mind again word by word through eye and ear, and out by tongue and look and gesture and pen. The mind catches one element of meaning in a word at a time, and must needs work it over many times and ways to get up into the consciousness of developed minds. A living language slips into one ear and out at the other, and a little of it out by tongue. The chatterboxes think a few hundred housewords of a modern language will show them what was in the mind of Goethe and Pascal. Learning to talk in a few months is a baby's smartness. It is a man's part to rethink the thoughts of a great mind which are always between words. The facts of science recorded in German and in French are to be learned by any student only by the patient and severe manipulation of words and words. It would be a good thing for some students if the German and French languages were entirely dead to them instead of nearly so.

There is no better manipulatory discipline for many minds than dead languages that include great histories and literatures, like the Greek and Latin. A classic language is always an ideal speech that works to and fro through all the experiences of the human mind. The people never hear it—only tones that suggest it. It is of no consequence <sup>to</sup> to talk Greek or Latin. Modern classics, including English, are as dead to most people.

There is no way of learning the vast and precious knowledge of the ancient world, except by manipulating the meaningless signs of Greek and Latin till the words become living voices once more in the consciousness. Language is the only product of the mind. A literature embodies all the minds of a civilization. When it is dead the student

works through every element of thought, and every process of thinking, and every fact of human experience, till his whole mind is set growing in all its faculties, till his knowledge of human life is broad and deep, and wisdom is at one with culture. Histories make men wise—not feelings, nor prophecies. We look back to the ancients not to take sides in their affairs, but to understand them. We get away from our passions and prejudices. And the ancients are ourselves that lived yesterday.

It is the chief merit of the Bible, as the educational book of Christendom, that is written in dead languages, the language of most spiritual sensibility joined with the language of most exact expression.

The din of debate about ancient and modern languages is not to be settled by the folly of excluding either from collegiate training, but by providing parallel courses, in which the ancient and the modern languages shall be respectively combined with the mathematical and natural sciences, and the arts. There are many students who will not be trained, and ought not to be trained, in Latin and Greek. For them there abundant mental discipline in manipulating German and French and English.

Now the educational effects of these constant and varied manipulations going on in laboratories of physics, chemistry, mechanics, and languages, are clearly witnessed in the inventive and discovering qualities of the mind.

The secret and silent forces of nature are thus so constantly working things into the feelings and motions of the organs of the mind, that uniformities and differences of natural objects repeat themselves in the consciousness, till the things that have been yield up the conditions and motions of the things that are, and a hint of the things that are to be. The manipulator's mind gets so close to the method in which the correlated forces of nature operate, as to hear the whisperings of their secret movements, and so discover the great principles that become embodied in new forms, and machineries, and appliances. The inventions in natural sciences, like the grand products of oratory and poetry, of the historical literatures of law, philosophy and art, are all discovered by the quick and penetrating qualities of the mind, developed by manipulation.

But the education here provided by the State includes more than laboratories and languages. Here are museums and cabinets, and a variety of apparatus pertaining to Botany, Zoölogy, Geology, and the like sciences, which are distinguished not so much by manipulation as by the constructive principles of *classification*. Here are mineral fragments, soils, rocks, ores, mingled with dead parts of plants and ani-



mals, all ticketed with names of other things which they signify. It is nothing to know the names.

Stratigraphical geology is mathematics, astronomy, physics, chemistry and mechanics in concrete form. Economic geology is joined with scientific manipulation, and all practical industries of agriculture, and the mechanic arts.

Botany and Zoölogy are sciences of concrete forms of organized living bodies, embracing all the laws that govern the masses and motions of material bodies, together with the laws of life.

The educational effects of studying these sciences are peculiarly exhibited by the processes of classification.

Classification is a contrivance of the mind for the orderly grouping of our ideas of objects, in such a way as to aid the memory in retaining knowledge already gained, and to assist the mind in making further discoveries of the uses and laws of things. Our ideas of objects are made up of resemblances and differences, and the classification of notions only approaches the groups of real things. The points of resemblance, or of difference, place, habitat, time, size, form, use, and the like, are all selected as principles of classification, according to the purpose present in the mind aiming at some practical use of things. So plants are annuals, biennials, herbs, trees, deciduous; and animals are vertebrates, invertebrates, quadrupeds, fish, fowls.

But it is nothing to know names in common talk. The mind is right away empty of mere names, and artificial terms of classification. A good classification is one that enables the mind to make the most assertions of facts. His name is Smith, but your knowledge of him does not enable you to say anything about the other Smiths.

The student must find and name a characteristic that is always found together with the most other properties in order to make a scientific classification. Thus the wayfaring fool sees that animals are one group, and plants another. But the mind is trained to observe and discover that animals are characterized by sensation, by voluntary motion, by a stomach; while plants are wanting in these traits, and so far hold a negative relation to animals; that animals produce fat, while plants produce starch, and therein the two groups are marked by different products; that animals consume carbonaceous food, while plants produce carbonaceous tissues; that animals produce carbonic acid which in turn the plants absorb; that plants evolve oxygen, which in turn the animals absorb; showing thus three relations of mutual exchange and common dependence upon vital laws. So classification widens the groups of facts and ideas, until we now see no sharp line between the

organism of a plant and that of an animal. Meanwhile the mind has been going through all the relations of natural groups, rethinking the thoughts embodied in the laws of creation.

Physical and mechanical manipulation may be so confined to parts of dead matter in the laboratory as to make the mind acute and skillful in shop science, but too narrow for the rolling globe outside, covered all over with societies of living creatures and sweeping through the vast and solemn spaces of the universe.

The student of the sciences requiring classification must think from centre to surface of the rolling globe, through all its mingled masses, over all its conterminous areas of lands and waters, through all the dissolving margins of inorganic and organic bodies, and of the transformations and transmutations of living creatures.

The educational effect of the classificatory sciences is to make the mind subtle, wise, and comprehensive.

There is always the danger in manipulating and classifying second causes of becoming so absorbed with the knowledge of the nature outside of man, as to ignore or deny the higher truths within human nature itself. Lord Bacon never wrote anything more philosophic than the solemn caution :

“ A little philosophy inclineth man’s mind to atheism, but depth in philosophy bringeth men’s minds about to religion ; for while the mind of man looketh upon second causes scattered, it may sometimes rest in them and go no farther ; but when it beholdeth the chain of them confederate and linked together it must needs fly to Providence and Deity. ”

Consider now the problem of education in Agriculture. There are three kinds of living creatures on the earth—plants, animals and human beings. The problem is how human beings can obtain from the earth the greatest quantity of the lower kinds of living creatures in such conditions that by killing nearly all of those produced the lives of human beings shall be increased in number, in duration and in happiness. The central idea of the whole problem is in one word, *life*. The central difficulty is in the struggle for existence. The first thing to do is to realize our total ignorance of what life is in its essence, and our vast and dark ignorance of the conditions of the generation and reproduction of living bodies.

We are told there was a time when no living creatures inhabited this planet, and that the time is coming when it will again contain no living creature. This implies that there is an intervening time when the life energies of the earth shall have produced the maximum

of living creatures. If this be so, let us hope that we live in the progressive period of human history.

Certain it is, that while the human population of the earth is larger than it ever was before, many races here and there have perished with all they builded. But the most of human toil has always been expended in getting plants and animals for livelihood. Men have lived by the sweat of their brows, except a few who have made other brows sweat out their shares. Where there has been plenty of land, agriculture has been chiefly manual labor, while education has been confined to languages, philosophies, arts, the things necessary to build cities, to control manufactures, to govern society. Where the population has crowded upon the means of subsistence, there has been a decline of manufactures and the arts, compelling the educated classes to give attention to the absolute importance of agriculture.

It is a grave mistake to suppose that the ancients knew nothing of scientific agriculture. The Egyptians had experimental farms, very much like ours. Cato wrote an exhaustive book on agriculture. The Georgics of Virgil are full of our own common talk on nearly every topic. Varro, the learned scholar of the Augustan age, wrote three books—a complete cyclopædia of agriculture.

Columella and Palladius, each with thirteen books, surpass all their predecessors in scientific completeness, and appear to touch every branch of agriculture. Their catalogues of implements, of plants and animals, their descriptions of experiments and fertilizers, of tillage and breeding, are largely the same talk that we hear to-day on every side.

Columella describes underdraining equal in all respects, except convenience and economy, with the tile-draining of to-day.

The preservation of green forage in silos, which many to-day oppose as a doubtful innovation, was a common process in Greece, Italy, Africa and Spain. Columella, Varro, Pliny, Curtius, and other writers clearly describe ensilage.

Vegetius wrote a large work on Veterinary science, and Wilkinson shows that the Egyptians developed this science to a high degree of perfection. Pliny and Palladius describe in detail the header reaping machine, used on the vast estates of the Gauls. Diodorus and Tacitus tell us how the Britons and the Germanic nations employed silos for the storage of green crops. English husbandry boasts of turnip culture, but Pliny tells of the equal success of the Romans in this most important part of farming.

Professor McBryde has collated many such facts as these, and

appends a quotation from Columella, which is substantially echoed to-day by the friends of agricultural education :

"I can not sufficiently wonder, says Columella, how it is that those who are eager to become speakers, select an orator whose eloquence they can imitate; those devoting themselves to the subjects of mensuration and mathematics, engage a master of the study of their choice; those desirous of becoming skilled in dancing and music very carefully seek for one who can train the voice and instruct them in singing; as well as for one who can direct the motions of the body; even those who wish to build, call to their aid mechanics and architects; those committing their vessels to the deep, skilled pilots; those engaging in war, men versed in arms and acquainted with military affairs; and, not to mention each *seriatim*, for the calling which any one wishes to pursue, he employs the one best qualified to teach it; in fine, each one summons to his aid from the assembly of the wise a director for his mind and an instructor in excellence, while husbandry alone, which, beyond all doubt is nearest to, and as it were the blood relative of wisdom, stands as much in need of scholars as of masters. For, until now, I have not only heard that there are, but I myself have seen academies for rhetoricians, and, as I have said, for geometricians and mathematicians, but what is more remarkable still, technical schools for the most contemptible vices, for dressing food more daintily, for concocting more appetizing dishes, and for hairdressing, but I have never known any professing to be either teachers or students of agriculture."

But let us hope that modern agriculture has substantial advantages as compared with ancient husbandry.

Here are schools and experiment stations with appliances of which Columella scarcely dreamed. A course of studies in agriculture is made parallel with all others that reach up to the highest degrees of learning. All the laboratories of the natural sciences are involved in the art of agriculture. Mathematics, physics, mechanics, chemistry, botany, zoölogy, geology, all the sciences of manipulation and of classification are necessary to scientific agriculture. The experiment station means the application of all these sciences to this comprehensive industrial art, while the very term experiment betrays our ignorance of the main question.

But chemistry has advanced so rapidly within recent years, that it not only has exalted its value as second to none of the manipulatory sciences, but bids fair to establish a claim to be recognized as a classificatory science. If anything will do it, chemistry will discover the processes of natural transmutations, the sources of supply to plant life and animal life.

The thing needed is coöperation of all the experiment stations with each other, and with the department of agriculture in the National Government. Isolated efforts involve a vast waste of time, energy,

materials. There is nothing more in need of the encouragement and aid of the government, nor anything that will return a richer reward to the State. With a full equipment of agricultural chemistry, botany, horticulture and entomology, added to complete equipments of the existing laboratories, and with the coöperation of the experiment station, the meteorological bureau, and the various agricultural organizations in the State, this University can accomplish a work of vast benefit to all the people at far less cost than the amount wasted on every hand, each year, for lack of knowledge only.

Let it be clearly understood that agricultural education is not to be confined to the special training of young students, but must be largely occupied with the instruction of public opinion regarding the absolute importance of scientific agriculture, and with the organization of public opinion into co-operation with the practical industries that must take shape out of scientific methods.

It must be borne in mind that the baccalaureate degree in the agricultural course cannot be lowered in comparison with technical and professional degrees. The path of science is as steep and rugged on that side as upon any other.

Many young men that return to the farm after going through a part of the course, are indeed better fitted for success, but their parents and themselves alike are seriously mistaken in not resolving that the entire course is indispensable. True, it is, that many students after four or six years of study in a community of scholars, will not return to manual labor on the farm; but the very thing that is needed is to train up a class of scientific farmers who will not have to spend their lives in drudging toil, but who shall, like other scientifically trained men in mercantile and in professional life, be able to employ all the brawn their brains shall require.

I have considered agricultural education at this point in my discourse, not so much because the course in agriculture has been among the last to acquire an equal and parallel standing with the courses of higher education, but because its very nature and great importance involves the comprehensive application of all the manipulatory and classificatory sciences relating to inorganic and organic bodies.

We have now considered the apparatus of education in those broad aspects that are commonly called practical as contrasted with those called liberal. They relate to things outside of man's own nature as contributing supplies to human life. But indeed all knowledges of things, outside of manhood itself, do not constitute education at all.

Education is of man's own nature or it is nothing. The knowledges acquired by the human mind of things in the external world—plants, animals, machineries of industry, and the like, must in their nature vary with every climate and race and age. But man himself is the proper study of mankind, and always the same study. Libraries that record human experience, and living voices that speak it, the co-working of minds with minds in class-rooms, in societies, the conversations of private life, the literary discussions and public debates, all these are the apparatus of liberal and manly culture which must always be the chief part of education. If it be practical to control machines and brute creatures, it is no less practical to acquire scientific control of the body, the mind, and the heart of human beings. The physician who deals with the body of man, the lawyer who is concerned with his mental life—his reputation, property, personal rights, and civil conduct, the minister of religion, who is concerned with his moral affections and spiritual sensibilities, with the training of children, with private griefs and with social purity; these professional characters are the product of human nature itself; and their importance and practical value can never be replaced or diminished by anything outside of man himself. But what shall I say more of the economic and social sciences developed out of the conditions and characters of human beings? of antiquities? of history? of political economy? of constitutional law? of the fine arts? of literature? of mental and moral philosophy? of religion? No schemes of training in natural sciences are practical unless they are joined with these parts of the liberal culture of man's own nature. Nor is any scheme of education in the humanities truly liberal that does not closely join with the practical disciplines of the manipulatory and classificatory sciences.

The scientific controversies of the age of Newton centered in ideas of space—ideas terminating in nature outside of man. A vast and permanent change was wrought in the human mind when it beheld the immeasurable spaces of the universe as if indeed it were a new creation. The littleness of man's place in nature compelled a reconstruction of theories as to his relations with the natural objects filling the spaces of creation, while the Newtonian astronomy disclosed and exalted the greatness of the power of man's mind over the space-filling objects around him.

The effect of this upon the imagination is seen by comparing the childish superstitions of the Miltonian cosmogony, with the heavens described by the genius of Byron in *Cain*. Its effect upon the practical



reason is exhibited in the stimulation of research into all the parts of the heavens, and into the cosmical forces generating the forms and properties of material bodies. Then Herschel suggested and Laplace developed the nebular hypothesis respecting the origin and formative processes of the solar systems, while the *Novum Organum* of Bacon laid hold of man's world with the exploring and experimental zeal of inductive inquiry. The whole group of natural sciences, mathematics, astronomy, physics, chemistry, geology, botany, zoölogy, and the like, were joined together in the vast accumulations of human knowledge that necessarily wrought great changes in the forms of industry, of commerce, of social, civil, and ecclesiastical polities.

The scientific controversies of the age of Darwin are centered in ideas of time—ideas that terminate in man's nature. For the common element and inexpugnable test of all these mingled motions of space objects is time. For all objects occupy parts of space, but the rolling globes have their being, and move in the same instant of time. All spaces and times meet in the human soul. Let the sciences of nature behold spaces so vast that man's origin must be pushed back to a place as little as it is remote, and the original places of things be pushed a yet vaster distance further back. Still, things must move together, till man appears, with a mind developing into knowledge of all spaces and times, and uniting all into the consciousness of the Eternal Being and the endless life. The tendency of sciences in this age is toward personal ideas. Discussions turn on conceptions of supreme persons in science, in politics, and in theology. For great organizers are coming to be needed more and more. The rapid communication of innumerable minds, and almost equally rapid exchange of powers and products among the dense populations of the globe, are demanding and developing the highest orders of executive genius and philosophic wisdom ever displayed in the history of man. Surely the State is called upon everywhere to provide for the education of the masses, but all the stars of heaven and all the souls of men call for all degrees of liberal education, reaching to the highest. But any scheme of education that ignores the moral conduct and the religious nature of undergraduate youth, must be pronounced fundamentally defective by the consenting testimonies of natural sciences, as well as by the voice of every enlightened conscience. Let us hope, that while the State of Ohio will here maintain a University which shall be non-sectarian in the fullest and best sense of the term, the morality and religion of the Christian civili-

zation shall be recognized and cherished as the most precious elements in the education of the young. And, in behalf of this encouraging and inspiring hope, I invoke upon this University the blessing of Almighty God.

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